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Research Publication no. 15,

LEGISLATIVE COUNCIL

SUBCOMMITTEE ON

WATER PROBLEMS

REPORT TO THE

COLORADO GENERAL ASSEMBLY

FEBRUARY, 1955

LEGISLATIVE COUNCIL
SUBCOMMITTEE ON
WATER PROBLEMS

(Created pursuant to S.J.R. 4, 1954 Regular Session)

Senators

Donald G. Brotzman, Chairman
James W. Mowbray
Ranger Rogers

Representatives

R. Malcolm Keiry
Frank E. Kemp, Jr.
Clayton D. Knowles
Frederick T. McLaughlin
Frank R. Stewart

Shelby F. Harper, Director

The Legislative Council, which is composed of five Senators, six Representatives, and the presiding officers of the two houses, serves as a continuing research agency for the legislature through the maintenance of a trained staff. Between sessions research activities are concentrated on the study of relatively broad problems formally proposed by legislators and the publication and distribution of factual reports to aid in their solution. During the session the emphasis is on supplying legislators on individual request with personal memoranda providing them with information needed to handle their own legislative problems. Reports and memoranda both give pertinent data in form of facts, figures, arguments and alternatives without these involving definite recommendations for action. Fixing upon definite policies is, however, facilitated by the facts provided and the form in which they are presented.

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Colorado. LEGISLATIVE COUNCIL

SUBCOMMITTEE

ON

WATER PROBLEMS

Research publication

Report to the

COLORADO GENERAL ASSEMBLY

February, 1955

TABLE OF CONTENTS

LETTER OF TRANSMITTAL

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CANC

FOREWORD

RECOMMENDATIONS

SECTION I. FUNCTIONAL ASPECTS OF THE STUDY OF COLORADO'S
WATER RESOURCE.

- A. Review of the State Water Agencies and Offices
- B. Adequacy of the Level of State Financial Support of
Its Own Water Offices
- C. Federal Agencies and Offices Participating in Water
in Colorado
- D. Development of Legislative Reference file

SECTION II. LEGAL ASPECTS OF THE STUDY OF COLORADO'S
WATER RESOURCE

- I. Legal Status of Water Right
- II. Appropriation Procedures
- III. Priorities and Preferences
- IV. Adjudication and Administration
- V. Changes of Mode of Enjoyment
- VI. Extinction of Right
- VII. Rights to Waters Not Naturally Tributary to Streams
- VIII. Tort Liability for Interference with Natural Water Conditions
- IX. Interstate Waters

UNDERGROUND WATER

SECTION III. PUBLIC LAW 566, WATERSHED PROTECTION AND FLOOD
PREVENTION ACT

Opinion of the Attorney General of Colorado

APPENDIX A. Report on Water Rights and Irrigation Administration Office
of the State Engineer

APPENDIX B. The Colorado Water Conservation Board, A Report on Its
Origin, Functions, Organization, History of Appropriations
and Relations with Federal Departments

APPENDIX C. Colorado Needs Ground-Water Legislation: W. E. Code

APPENDIX D. Small Watershed and Flood Prevention Act, Public Law 566

LETTER OF TRANSMITTAL
JOINT LEGISLATIVE COMMITTEE
ON
WATER PROBLEMS

February 10, 1955

The President of the Senate
The Speaker of the House of Representatives
And Other members of the General Assembly

The Joint Legislative Committee on Water Problems, created by S.J.R. 4, Regular Session, 1954, as a subcommittee of the Legislative Council, submits this report covering its study of the water problems of Colorado.

Respectfully,

R. Malcolm Keiry

Donald G. Brotzman, Chairman

Frank E. Kemp, Jr.

James W. Mowbray

Clayton D. Knowles

Ranger Rogers

Frederick T. McLaughlin

Frank R. Stewart

FOREWORD

The 39th General Assembly by enacting Senate Joint Resolution No. 4, 1954 Regular Session recognized the need for the Colorado Legislature to exert a sustained effort to study and apprise itself on water matters in order that it might better assume its rightful responsibility in this functional area which is so vital to Colorado's continued growth and prosperity. Pursuant to the provision of S.J.R. 4, the following members were named to the Joint Legislative Committee on Water Problems:

SENATORS

Donald G. Brotzman, Chairman
James W. Mowbray
Ranger Rogers

REPRESENTATIVES

R. Malcolm Keiry
Frank E. Kemp, Jr.
Clayton D. Knowles
Frederic T. McLaughlin
Frank R. Stewart

Shelby F. Harper, Director of the Legislative Council, performed the staff work for the committee.

This committee held public meetings and conducted research into the functional and legal aspects of Colorado's invaluable resource ---- WATER. The findings of the committee are set forth in some detail in the following pages, and the five recommendations of the committee are specifically set forth on the next page.

During the course of the committee's deliberations, its attention was directed to the Small Watershed Improvement and Flood Prevention Act, passed by the United States Congress and approved by the President in August, 1954. The committee took especial notice of the pro-

visions of this Act and has included a separate section on it in this report in order that this important measure may be more fully understood by the members of the 40th General Assembly with the result that Colorado may proceed to take maximum advantage of its benefits.

The committee wishes to express its gratitude to the representatives of the state and federal agencies who appeared before it at the public hearings and assisted in the research efforts of the committee members and staff. The contribution of Mr. John Geoffrey Will, General Counsel of the Upper Colorado River Commission, was significant, and the content of his testimony was preserved for the future edification and guidance of the General Assembly. In addition, the committee is particularly grateful for the time which Governor Edwin C. Johnson devoted in acquainting the membership with recent developments in regards to proposed federal legislation. The committee clearly recognizes that to bring about an equitable and early solution to the state's water problems there must be close and continuous liaison between the Executive and the Legislative branches of state government.

RECOMMENDATIONS

The Joint Legislative Committee on Water Problems recommends:

1. That the regulation of well diggers, an administrative function, be transferred from the Colorado Water Conservation Board (a policy making agency) to the Office of the State Engineer (an Administrative agency), and that the different purposes of these two agencies be recognized in future legislative assignments of duties.

2. That the General Assembly take cognizance of the fact that Colorado has made inadequate appropriations for the protection and administration of an invaluable resource--WATER, and that the appropriating committees of the General Assembly give careful and sympathetic consideration to the 1955-56 and subsequent budget requests of the Colorado Water Conservation Board and the Office of the State Engineer, with particular attention to PERSONNEL REQUESTS, namely increases needed in the professional staff, and salaries adequate to recruit and hold qualified personnel.

3. That the 40th General Assembly proceed immediately to enact an underground water code, and, that the General Assembly appropriate sufficient monies to permit the State of Colorado to fully participate in United States Geological Survey studies of underground water.

4. That the General Assembly lend full assistance to the State Soil Conservation Board in an effort to have Colorado water users gain

full benefit from the provisions of Public Law 566, 83rd Congress, the Small Watershed Protection and Flood Prevention Act.

5. That the General Assembly continue through a Joint Legislative Committee to study and apprise itself as to Colorado Water Problems in order that it can continue to carry out its rightful responsibility in this problems area. Further, the Colorado Water Conservation Board, the Office of the State Engineer and such other agencies assist the General Assembly to meet this responsibility by cooperating with the Legislative Council in its efforts to compile a working library on Colorado water problems.

SECTION I

FUNCTIONAL ASPECTS OF THE STUDY OF
COLORADO'S WATER RESOURCE

The Committee in studying the functional aspects of Colorado's water resource proceeded to:

- A. Review the state water agencies and offices to determine their purpose and functioning.
- B. Review the adequacy of the level of state financial support of its water offices.
- C. Determine which federal agencies and offices participate in the functioning of water matters in Colorado.
- D. Develop a legislative reference file of source material relating to water development and conservation in Colorado.

A point by point presentation is made on the four areas of inquiry as follows:

- A. Review of the state water agencies and offices to determine their purpose and functioning:

The Office of the State Engineer^{1/} created in 1881, is the state agency charged with primary responsibility for the administration of the use of water from natural streams in Colorado. At the present time the Engineer's Office with the assistance of seven division engineers, nineteen full-time water commissioners, 46 part-time water commissioners and 57 deputy water commissioners (used on a per diem basis) administers and estimated 25,000 adjudicated water rights and other waters of this state. Mr. J. E. Whitten is presently Acting State Engineer pending the Civil Service examination for the vacancy created by the retirement early in 1954 of Mr. M. C. Hinderlider.

The State Engineer is the chief administrative officer, and through his office and employees administers the following interstate compacts:

La Plata River (Colorado-New Mexico)
South Platte River (Colorado-Nebraska)
Rio Grande River (Colorado-New Mexico-Texas)
Republican River (Colorado-Nebraska-Kansas)
Costilla Creek (Colorado-New Mexico)

^{1/} For detailed presentation on the office of the State Engineer, the purpose, functioning and financing, See Appendix A of this report.

In addition, the State Engineer administers the Laramie River and also the North Platte River, in accordance with decrees of the United States Supreme Court.

The State Engineer has general supervising control over the public waters of Colorado, and, as a further element of his duties, he is required to make hydrographic surveys of each stream, system and source of water supply in the state, collect data regarding dams and reservoirs. In addition he must give approval of the plans and act as consulting engineer in cases of reservoirs with a capacity of more than one thousand acre feet or having a dam or embankment in excess of ten feet in vertical height, or having a surface area at high water line in excess of twenty acres. Further adding to the responsibilities of this office have been the legislative assignments as ex-officio member of the following six boards and commissions:

Irrigation District Commission
Public Irrigation District Commission
State Planning Commission
Colorado Water Conservation Board
State Board of Registration for Professional Engineers
State Board of Examiners for Land Surveyors,

and in 1951, the General Assembly placed the Engineer on the Weather Control Commission and made him responsible, jointly with the Commissioner of Agriculture, for the administration of rules regulating weather control operation in Colorado.

The Colorado Water Conservation Board^{2/} (CWCB) was created in 1937 under the theory that interstate water matters and project promotional efforts should be divorced from the administration of water rights. The Board consists of five state officials, Governor, Attorney General, Director of the Planning Commission, State Engineer, and the Director of the CWCB

^{2/} For detailed presentation of the Colorado Water Conservation Board see Appendix B of this report.

serving as ex-officio members and nine appointees of the Governor serving for three-year staggered terms. Of these nine members, one represents the San Juan and San Miguel watersheds, one the Gunnison and Uncompahgre watersheds, one the main stem of the Colorado River, one the Yampa River and tributaries, one the Upper Rio Grande, one the Arkansas River watershed, one the South Platte watershed, one the North Platte watershed, and one the City and County of Denver in the South Platte basin. Mr. Ivan C. Crawford is presently Acting Director of the CWCB pending the Civil Service examination for this position.

The general purpose of the board is to promote the conservation, development and utilization of the water resource of the state and act as the official agency of the state in interstate and international water compacts. The statutes set forth numerous functions for the Board to perform and they may be summarized briefly as: Establishment and maintenance of over-all policies and procedures respecting the state's water resources in order to bring about greater utilization of these waters and to prevent flood damage therefrom; in accomplishing this they shall perform investigations and make surveys, cooperate with boards, bureaus, committees, commissions or other agencies of other states or the Federal Government; the CWCB is the administrator for Colorado of the Arkansas River Compact; and the CWCB is further directed to foster and encourage the organization of irrigation districts, water users' associations, conservancy districts, drainage districts, mutual reservoir and mutual irrigation companies, grazing districts and any other agencies formed for the conservation, development and utilization of the waters of Colorado; and in addition, in 1953 the General Assembly enacted legislation providing therein for the licensing of well-drillers and named the CWCB as the agency to make and enforce

the rules and regulations for the administration for said act.

Does Colorado need two independent agencies functioning in the field of water resource? Such a question was asked during the course of the Committee's public hearings and the testimony of the directors of these two agencies indicated that it was the considered judgment of both officials that the state needs two such agencies. The administration of water and water rights, it was stated, should not be the responsibility of the same agency which has as its principal function one of promoting the greater utilization of water, or protection of the water of this state in negotiations with other states. It is well in this regard to note the remarks of Ivan Crawford, Acting Director of the CWCB in his testimony before the Committee on December 29, 1954:

MR. CRAWFORD: "It might be interesting to note that in the past two years Utah, for example has divorced from the State Engineer's office its interstate stream organization corresponding to the organization we have here. Arizona has that type of organization. New Mexico has the other type organization where the State Engineer has the Interstate Stream Office as a part of his organization. In Wyoming I haven't been able to clearly define the boundaries of administration up there because while the State Engineer commands the budget, the Natural Resources Committee appears to have a very considerable amount of say with regard to the operation of their interstate water matters."

However, testimony did develop the fact that both officials believe that the administration of Chapter 246, Session Laws, 1953, the so-called "well diggers law", should be transferred from the Conservation Board to the State Engineer. In regard to well driller regulation the following testimony is particularly pertinent:

REPRESENTATIVE KNOWLES: "Is there any particular conflict, as a matter of duties, between your office and the Water Conservation Board?"

MR. HEZMALHALCH:^{3/} "I personally feel that the licensing of well drillers is a function of the State Engineer's office rather than the Water Conservation Board."

^{3/} Mr. C. C. Hezmalhalch, Deputy State Engineer for over 30 years, and temporary Acting State Engineer during part of 1954.

SENATOR ROGERS: "I want to ask here in regard to the function of licensing well drillers. You suggested that it should be under your department and the Water Conservation Board is of the same opinion. Do you want to help us draw a little measure to that effect?"

MR. HEZMALHALCH: "I have no objection to it, I think it is a function of our department. Anything that has to do with the appropriation use and administration of the waters of public streams or underground waters I believe should be in our department."

Earlier, at the December 29th, 1954, hearing of the Committee, Acting Director of the Colorado Water Conservation Board, Ivan Crawford, stated:

REPRESENTATIVE KEMP: "Mr. Crawford, in one of our earlier meetings, you discussed briefly certain functions of the Water Board as they pertained to the carrying out of the duties given to you by Senate Bill 120 (Ch. 246, Sessions Laws, 1953), which briefly has to do with the permits, licenses of the various water wells drilled throughout the state. It was my thought that you felt it was purely administrative function, and that the regulations and various other functions called upon by said S.B. 120 should be more properly done by the State Engineer. Is that right?"

MR. CRAWFORD: "With regard to the water drillers licensing, I should say, Yes. However, I should like it understood the Water Board feels that a part of its field should be in the determination of the underground water resources from the basins."

B. The adequacy of the level of state financial support of its own water resources.

One of the matters upon which the Committee sought to inform itself was that of the level of support which Colorado provides for the state water offices particularly in comparison with other Western States. Officials of both the State Engineer's office and the Colorado Water Conservation Board testified before the Committee that Colorado has not been making adequate financial effort to support these activities, and that this state was handicapped thereby. Acting CWCB Director. Crawford was requested by the Committee to obtain comparable financial support data from other Western

States and in this regard, his testimony on December 29, 1954, is of interest:

CHAIRMAN BROTZMAN: "Would you like to proceed from your reports specifically in relation to per capita expenditures by the State of Colorado in relation to other states, preferably in this Western area?"

MR. CRAWFORD: "Last summer, when this matter first came up, I did some corresponding and secured the following data:

In the State of California, the appropriation per capita for water resource development ... was about 40 cents, some place between 35 and 40..."

CHAIRMAN BROTZMAN: "Check those figures clearly, will you Dean please, so that we can all get a note on it. 40 cents?"

MR. CRAWFORD: "The amount of money spent for water resource work in California amounts to 40 cents per capita, and this is tax raised money. In Colorado it's 7 cents per capita, 7 cents and 3 mills, to be exact. Now, I am not taking into account the \$100,000 ⁴/₄ that we have not spent all of yet, but I am taking a general average of appropriations over the years. In Utah, it's 9 cents and 4 mills; in Arizona it is 22 cents this coming year, 11 cents last year. In Wyoming "

CHAIRMAN BROTZMAN: "That last one was 22 cents for the year 1955."

MR. CRAWFORD: "Yes, and 11 cents for the year 1954. Wyoming, for this year is 14 cents and 3 mills, and New Mexico for water resources investigations for this year is 40 cents even. Those I have substantiating material for in my files"... The last in a letter from a man who formerly worked in our office and left on account of the salary scale and is now State Engineer for New Mexico, a man named John Erikson. They have 40 cents this coming year per capita for each taxpayer in the state--40 cents."

The Acting State Engineer in his 1955-56 budget request has this to say: "It has long been apparent that the efficiency of the department has been seriously handicapped through the lack of adequate staff compensated in accordance with required technical ability and the service to be rendered to the Public.

"Initiated by the present head of the department and sponsored by the Colorado Water Users Association, a revised budget will be presented covering requested appropriations for the fiscal year July 1, 1955 to June 30, 1956. This budget will include additional required personnel and a complete revision of classification and salaries to conform to a similar schedule in this and other states."

4/ \$100,000 appropriated by Chapter 245, Session Laws, 1953, for study of water resources available from surface supplies west of the Continental Divide.

The Acting Director of the CWCB further testified that:

"Time after time the past fourteen years the engineers have left the Colorado Water Conservation Board on account of the salary schedule, which is the one not only for the Board, I understand, but for the other departments in the state. But, with us, it is critical because unless we have a fair proportion of these men who stand well professionally, who have had the experience, then we can't give the credence to the reports (Federal) and criticisms of the reports which we should."

As to the importance of this phase of the Board's work, in this same day's testimony Crawford had brought out that in an earlier examination of a report by the Bureau of Reclamation and the U. S. Corps of Engineers relating to a proposed project in Colorado--careful review by the Board's consulting engineer and resulting efforts of the Board brought the cost of the project down from eleven million dollars as originally estimated to somewhere between three and four million dollars. Crawford cited an additional instance where this same consulting engineer had in 1954 through careful review of the Bureau of Reclamation project been able to advise the Board of certain conditions, and as a result the Board working with the local people had been able to get the Bureau to restudy the project and as a consequence of the action it is expected that the project which will now be proposed will be just one-half the size of that originally projected.

In addition Crawford testified as follows regarding the financial needs of the Board:

MR. CRAWFORD: "I want to again emphasize the necessity of having another engineer in my office of a Grade 14 or thereabouts and also additional legal help. Now, none of us know what the legal expenses are going to be for the coming years. We have an item in the budget of \$3,000. If Mr. Chilson is required to put in as much time in the future as he has in the past, we are either going to have to have more of his time or have some additional help. We must have this additional help in the engineering side if we are to meet our obligation of studying these reports and know what we're talking about. I just feel sure, but I hate to say this, that over a number of years from the standpoint of data, we just haven't known too much about what we were talking about. It's a

shame that the State of Colorado ever had to go to any firm of engineers to find out what the water flow was on the Western Slope. We should have had that and should have had help enough in our office for the last 20 years so that we would know more about that than anyone we could bring in from the outside. It is our hope that in the coming year or two that we can be able to fill in some of these blank spots, which really are blank at the present time."

C. Determination of which federal agencies and offices participating in the functioning of water matters in Colorado.

In order to better understand the complexity of state-federal relationships regarding water, the Committee sought to determine just how many Federal agencies, and divisions thereof, participated in water matters in Colorado. For the purposes of this report, it is not of particular value to elaborate upon the degree of their participation, but suffice to say that the CWCB and the State Engineer must maintain liaison and conduct negotiations with at least the following Federal agencies:

Bureau of Reclamation:

- Office of the Commissioner, Washington, D. C.
- Region 4, Salt Lake City, Utah, which includes all of the upper basin of the Colorado River,
- Region 5, Amarillo, Texas, encompassing the drainage area of the Rio Grande River.
- Region 7, Denver, which includes the drainage basins of the Arkansas, South Platte and North Platte Rivers.

U. S. Army, Corps of Engineers:

- District Office, Albuquerque, New Mexico.
- District Office, Los Angeles, California
- District Office, Omaha, Nebraska
- Area Office, Denver.

U. S. Geological Survey Office, Denver.

U. S. Department of Agriculture, Soil Conservation Service, Denver.

U. S. Public Health Service.

The appropriate committees of the United States Congress.

It would appear evident from the foregoing list of agencies that Colorado water officials have a complex array of Federal agencies with which they must maintain close liaison.

- D. Development of a complete legislative reference file concerning source material relating to water development and conservation in Colorado.

Through the excellent cooperation of the Acting Director and staff of the Colorado Water Conservation Board and the Office of the State Engineer, a number of valuable documents have been added to the permanent library files of the Legislative Council for the use of committees and members of the General Assembly interested in water problems of Colorado. In addition to these documents there are a number of sets of data which for one reason or another were not available for the legislative library. However, the CWCB made available to the Council, a 110 page bibliography (dated September, 1952) which indexes the various documents, publications, and materials relating to water resources, reclamation, flood control, hydro-electric development, and associated subjects available in the Board's library. In order that the legislative library file on water matters may be kept current, this Committee urges both the Director of the CWCB and the State Engineer to forward to the Director of the Legislative Council on a continuing basis such data and reports as they compile and release which will be of value to the General Assembly.

A listing of the material made available by the CWCB is presented below. In addition, the State Engineer has made available copies of pertinent Supreme Court decisions and interstate compacts. Also, the Legislative Council/ has and is proceeding to add such other documents as, in its judgment, will aid in the future study of the water problems of this state.

Colorado Water Problems by Ivan C. Crawford.

Report on Depletion of Surface Water Supplies of Colorado West of the Continental Divide, by Leeds, Hill and Jewett.

Colorado Water Conservation Board Report of Ivan C. Crawford for calendar year 1953.

4th Annual Report, Arkansas River Compact Administration. 1952 for report year November 1, 1951 to October 31, 1952, Lamar, Colorado.

A Plan for the Development, Use and Conservation of the Resources of the Arkansas Basin in Colorado. Colorado Coordination Committee, Arkansas, White, Red Basins Inter-agency Committee, October, 1953.

Interstate Compacts--A compilation of articles from various sources, 1946 proposed by Water Conservation Board,

Library Bibliography, Colorado Water Conservation Board.

Colorado's Water Resources by Ivan C. Crawford.

Origin and Functions--Organization, History of Appropriations Relations with Federal Departments, by CWCB.

Arkansas River Compact Hearings before a subcommittee on irrigation and reclamation of the Committee on Public Lands, House Representatives 81st Congress, 1st Session on H. R. 4151, a bill to grant the U. S. consent to the Arkansas River Compact.

Frying Pan Arkansas Project--Letter from Commissioner of the Bureau of Reclamation to Secretary of Interior--Presented by Mr. Millikin.

Frying Pan Arkansas Project--Letter from Commissioner of the Bureau of Reclamation to Secretary of Interior--Presented by Mr. Millikin.

Cliffs Divide Project, Colorado. February 1954 Status Report. Bureau of Reclamation.

100 Years of Irrigation in Colorado. 100 Years of Organized and Continuous Irrigation, 1852-1952. Colorado Water Board and Colorado. A & M.

Arkansas River Compact--entered into by the State of Kansas and State of Colorado, December 14, 1948.

SECTION II

LEGAL ASPECTS OF THE STUDY OF COLORADO WATER RESOURCE

The Committee in its study of the legal aspect of Colorado's water resource made a review of the existing statutory laws of this state in conjunction with Supreme Court construction as well as the provisions of the Colorado Constitution relating to water. As an outgrowth of this study, and for the assistance and guidance of the members of the General Assembly, and other interested persons, as a reference source to aid in the preparation and consideration of legislation pertaining to water, the following outline^{1/} has been prepared:

I. Legal Status of Water Right.

A.

1. By Constitution, Colorado has dedicated all the waters of any natural stream to public use (Art XVI, sec. 5) and has declared that the right of individuals to divert such waters to beneficial uses by appropriation shall never be denied (Art XVI, sec. 6).
 - a) All waters that are tributary to natural streams, whether upon the surface or percolating through the ground, are part of the stream system and are covered by the title "natural stream" as used in the Constitution. *Safranek v. Limon* 123 Colo. 330.
 - b) All waters are presumed to be tributary and subject to stream priorities. The burden is upon one claiming proprietary rights in water to show that it is a source of supply that will not reach a stream system in such quantities as to effect the period or quantity of stream flow.
2. By statute, waste, seepage and spring waters that are not tributary to a natural stream, but which flow across the land of several persons may be appropriated by those across whose lands they flow, but subject to the paramount rights of the landowner at the source to capture such waters for use on his own land. C.R.S. 1953, 147-2-2 to 147-2-4. *Nevius v. Smith*, 86 Colo. 178 (held statute inapplicable to waters that were tributary to a stream, since the Constitution gave such waters to the

^{1/} The committee acknowledges with appreciation the expert assistance which Professor Clyde O. Martz, Law School, University of Colorado, provided in the preparation of this outline.

first user, without preference for the owner of the land upon which they arose.)

3. Non-tributary surface waters, collections of still water without visible inlet or outlet channels, and possible percolating ground waters (see dictum in *Safranek v. Limon*, supra) are subject to the proprietary rights of the landowner of the source.
- B. The water right is real property and called an incorporeal hereditament. As such it is subject to the Statute of Frauds and real property statutes of limitation; it passes as "real property" under a will; it is subject to taxation as real property, may be mortgaged with or apart from the land where used, and may be proved in a proceeding to quiet title.
- C. The right is usufructuary only. This simply means that there can be no private ownership of waters in a stream, rather, it is an ownership of a right to use such water.
 1. Water cannot be sold; the holder of any water in excess of his own needs must supply it free of charges other than transportation costs to others who demand it. *Wheeler v. Northern Colorado Irrigation Co.* 10 Colo. 582. This does not mean that the water right, which is a valuable property right, may not be sold.
 - a) C.R.S. 1953, 147-8-8 provides: Every person, owning or controlling or claiming to own or control any ditch, canal or reservoir who shall after demand in writing, made upon him for the supply or delivery of water for irrigation, mining, milling or domestic purposes, and after tender of the lawful rate, refuse to furnish any water so applied for, which water can by reasonable diligence in that behalf and within the carrying or storage capacity of his facilities be delivered without infringement of prior rights, shall be guilty of a misdemeanor.
 - b) C.R.S. 1953, 147-8-1 allows any person who has purchased water from a ditch or reservoir, and has not ceased to take water with the intent of procuring it from another source, a continuing annual right to take the same amount upon tender of the lawful transportation costs.
 - c) The rates of public ditch companies are set in Colorado by the Boards of County Commissioners rather than the Public

Utilities Commission. The company is allowed a reasonable return upon the cost of its ditch facilities plus costs of maintenance and operation of its diversion works and ditches. In *Commissioners v. Rocky Mountain Water Co.*, 102 Colo. 351, the Supreme Court refused to include in the rate base the value of the water right, on the theory that it was owned by the water users.

D. Situs of Water Right is the point of diversion rather than the place of use. *West End Co. v. Garvey* 117 Colo. 109.

1. Must be adjudicated in the district and state where the diversion is made.
2. Supplemental filings in the case of unadjudicated rights and modifications of decrees in the case of adjudicated rights are not necessary for a change in place of use of water, but only for a change in point of diversion.

E. Transfer of water rights.

1. Reclamation project water rights are appurtenant to and inseparable from the project lands 43 U.S.C. 431.
 - a) Such rights pass with a conveyance of the project lands in all cases without express reference to them.
 - b) A deed to a water right apart from the land is a nullity.
2. Private appropriation rights, obtained through private or mutual ditches, are appurtenant to the land where used to the extent that the appropriator owns an estate in such land.
 - a) If the appropriator is a trespasser or a tenant at will, his right is necessarily in gross and will not pass to the owner of the land without an express conveyance of it. *Hotter v. Kimsey*, 62 Colo. 326.
 - b) If appropriator has a life estate or term for years, his right will be appurtenant to the estate held but will not pass to the remainderman or landlord upon the termination of the estate. A clause in a lease, however, declaring that any water right acquired by the lessee belongs to the landlord is valid and constitutes the

lessee the agent for the landlord to make an appropriation. See *Hotter v. Kimsey*, 62 Colo. 326.

c) If appropriator owns the fee in the land the water right is appurtenant and will pass by implication in a conveyance of the land without an express writing. The statute of frauds is not violated since the written conveyance of the land suffices to pass all that is appurtenant to it.

1. Although appurtenant to the land, such rights may be transferred independently of the land, or reserved in a conveyance thereof.

2. In Colorado it is presumed that the parties do not intend a right to pass as an appurtenance of the land if they have not mentioned it in the deed. *Bessemer Irrigating Ditch Co. v. Woolley*, 32 Colo. 437. The purchaser can overcome this presumption by extrinsic evidence of intent, such as statements of the grantor, the price, the need of water for reasonable use of the land and so forth.

d) If a water right is transferred separate from land, it must be by deed with all the formalities for the execution of a deed in this state. C.R.S. 1953, 118-1-2

e) Water rights in mutual companies are generally evidenced by a certificate of stock. Such rights are conveyed by an endorsement of the certificate; this is followed by a transfer of the ownership on the books of the corporation. 18 Colo. 142.

3. Contract rights to water from public ditch companies are personal to the contracting parties and do not pass with a conveyance of the land, unless the by-laws of the company or the contract itself permits this free assignment.

a) A transferee of the land must make a new contract with the carrier.

b) He can demand such contract so long as water can be carried within the capacity of the ditch and not committed to others.

II. Appropriation Procedures.

A. Qualifications of Appropriator.

1. Any person, corporation or government entity, having a lawful use for

water and a lawful access to appropriatable water source may make an appropriation even though such party be an alien or under a legal disability.

a) The water may be diverted to other watersheds and on to nonriparian lands. The water conservancy district act of 1937 as amended in 1943, however, requires conservancy districts that take water out of the Colorado River Basin to provide compensatory storage to protect the future uses of those in the basin.

2. One who has no possessory right upon land cannot lawfully use water thereon and is denied appropriation rights in many states on the basis of his unlawful uses.

a). Where a squatter uses water on public domain in which he has no property interest, the Colorado court has held that a water right in gross may arise. *Hotter v. Kimsey*, 62 Colo. 326. All persons are licensed to be on the public domain, however, so the claimant in this case was not a wrongdoer.

b). Even though a trespass is made upon private land, it is arguable that an appropriation right could arise because of the broad mandate of the Colorado Constitution that the right to appropriate shall never be denied.

3. Where one effects a diversion of water by trespass upon the land of another, the Colorado Supreme Court has held both the water right and the ditch right voidable by the owner of the land against whom the trespass is made. *Sternberger v. Seaton*, 45 Colo. 401.

B. Elements of Appropriation.

1. Intent to take water for exclusive beneficial use.

a) Fact that water escaping from a ditch had produced incidental benefits to lower lands does not constitute lower landowners appropriators.

2. A diversion of water by man is required only where such diversion is necessary to put the water to a beneficial use.

- a) A dam across a stream is not a diversion if the water impounded thereby is not applied to a beneficial use. Windsor Reservoir & Canal Co. v. Lake Supply Ditch Co. 44 Colo. 214.
 - b) Use of stream for stock watering, water wheels, or power generation is basis for appropriation where diversion from the stream is unnecessary for beneficial use. See Steptoe Live Stock Co. v. Gulley, 53 Nev. 163.
 - c) Where nature puts water to a beneficial use and this use is affirmatively availed of by man, a change in application by the appropriator is unnecessary. Empire Water Co. v. Cascade Town Co. 205 Fed. 123 (8th Circ from Colorado).
3. Water must be applied to a reasonable beneficial use.
- a) The use must produce an economic return to the appropriator rather than appeal to his aesthetic senses only. In Empire Water Co. v. Cascade Town Co., supra the scenic beauty of water falls was held unappropriatable even though such falls were on private land that was used as a resort for profit by the landowner. The water itself was not producing an economic value and consequently was not being beneficially used.
 - b) Statute provides that the beneficial use must be within the state of Colorado. C.R.S. 1953, 147-1-1. But this statute probably applies only to intra-state streams since the United States Supreme Court has declared that state boundaries do not affect the superiority of right among appropriators.
4. Filing of Map and Statement is not mandatory but is prima facie evidence of the date and quantity of the right claimed. C.R.S. 1953, 147-4-1.
- a) Statute does not require filing to initiate right but directs that it be made within sixty days after the commencement of diversion works.
 - b) The map shows the point of diversion and line of canal; the statement shows the amount of water claimed.
 - c) If one fails to file, his right is not impaired, but he must produce extrinsic evidence at an adjudication proceeding to show the

date of his priority; if he files, he may submit a certified copy of the map and statement as evidence of right and cast the burden on an adversary to show the facts therein stated to be false. DeHaas v. Benesch 116 Colo. 344.

d) The state engineer has no discretion to grant or deny any appropriation right; the right does not rest on permit but upon use. All he does is file the maps and statements for information of others and serve notice on the basis of the filings for later adjudication proceedings.

e) Statute in 1919 required that a supplemental statement of claim be filed on all rights that would not be adjudicated by 1921. It declared that any right that was not adjudicated or for which a supplemental statement shall not have been filed "shall be conclusively presumed to be abandoned and shall thereafter become void and of no effect." In Archuleta v. Boulder and Weld County Ditch Co., 118 Colo. 43 the court held that notwithstanding this explicit requirement, the filing was directory and not mandatory, and that failure to file would "not amount to an abandonment or in anywise invalidate ones appropriation." This is because the Constitution makes priority of use the basis of right and provides that rights by appropriation can never be denied.

5. Adjudication of right when original or supplemental proceeding held.

a) Right exists by use rather than decree, and appropriator has no obligation to initiate proceeding for adjudication of right to firm up his appropriation.

b) Value of decree is to establish conclusively the date and amount of a right; decree is usually good against the world and free from collateral attack after the statutes of limitation have run upon it, except by persons with rights in other states and those who can show fraud in the procurement of it.

c) If a water user fails to appear in a water adjudication in the district, he does not lose his water right, but, by statute, is relegated to a priority date one day junior to the junior right adjudicated in such proceeding.

C. Right dates from first substantial act of appropriator that leads to the diligent application of water to beneficial uses.

1. Upon completion of his project, the appropriator can relate his priority back to the beginning of it for the full amount of water needed if the following conditions are met:

- a) The quantity desired is not in excess of the amount claimed in his map and statement or otherwise claimed at the time the project was commenced.
- b) The ultimate use of water was within the general plan contemplated at the outset.
- c) The entire project is completed within a reasonable period of time determined by the customs of the community and the economic conditions that affect all water users.

1. Due diligence is a question of fact in each case. 99 Colo. 542.

D. Quantity Limitations on Appropriation Right.

- 1. Storage appropriations have been limited by Court decision to one filling of a reservoir annually because of language of one time statute providing that a reservoir could get a priority according to the time of its construction and "the extent of its capacity for storage purposes." 44 Colo. 214. It is doubtful that this limitation exists under present statute (1943) which limits priority to such waters as may "be appropriated by such construction and such extension or enlargement if any." C.R.S. 1953, 147-9-15. In any event it is not objectionable for a reservoir owner to make several independent appropriations for the same structure at the seasons of the year when new fillings are made.
- 2. Use cannot exceed the quantity requirements of original need.
 - a) Although appropriations are measured in maps and statements and decrees by second feet of continuous flow, the courts have inferred that they are limited to the acre feet of water required for the original use. Any diversion in excess of such amount is called an "extended" use and cannot be exercised under the original priority. Enlarged Southside Ditch Co. v. John's Flood Ditch Co. 120 Colo. 423.
 - b) It is a question of fact how much a tract of land needs. One case has said the amount of water needed in ordinary year (and probably for ordinary crops) governs. See Cook v. Evans 185 N.W. 262.
- 3. Unreasonable waste in the diversion of water and the application of it to beneficial uses must be avoided.
 - a) Water is measured at point taken from stream and limited to needs of land plus reasonable loss in application.

b) Appropriator not required to use most economic method of diversion, but only that in common use in the community. Junior may improve works, however, and take salvaged water for own uses.

c) He is not entitled to use level of stream for the purpose of effecting a diversion when such level can be maintained only by limiting the beneficial uses of others in need of the water. Schodde v. Twin Falls Water Co. 244 U.S. 107.

d) By statute it is unlawful to run any greater quantity of water through a ditch than is absolutely necessary for irrigating lands (or other beneficial uses). The statute states its purpose to be the elimination of waste. C.R.S. 1953, 147-7-8.

E. Time Limitations on Appropriation Right.

1. Appropriations are impliedly limited to the season of the year when the right is enjoyed. Irrigation appropriations are limited to the irrigation season; reservoir rights are limited to the run off periods during which the reservoirs are normally filled. Farmers Reservoir Co. v. Lafayette, 93 Colo. 173.

F. Appropriators may condemn ditch rights-of-way across other lands.

1. Colorado Constitution (Art II, sec. 14) gives private individual a right of eminent domain for reservoirs, drains, flumes, or ditches on or across the lands of others for agricultural, mining, milling, domestic or sanitary purposes. In Art XVI, sec. 7 this right of way is allowed over both public and private lands.
2. Statutes have limited the burden that can be placed on private lands by such ditch right-of-way: (C.R.S. 147-3-1 to 147-3-6)
 - a) No tract of land may be burdened by two or more ditches when all water may be carried through one ditch.
 - b) Shortest practicable route must be used.
 - c) Permits one to use ditches that are already in existence, or to enlarge them, upon paying a proportionate part of the cost of construction and enlargement.

3. The constitutional and statutory eminent domain provisions have been held to be valid under the Federal Constitution on the theory that irrigation uses are quasi-public and that condemnation by private persons is consequently for a public use. *Clark v. Nash*, 198 U.S. 361; *Pine Martin Mining Co. v. Empire Zinc Co.*, 90 Colo. 529.
4. Colorado Constitution Art XVI, sec. 7 has been construed to permit the condemnation of city owned lands for ditch uses. *Longmont v. Lyons*, 54 Colo. 112.
5. Rights-of-way may be obtained across public lands by Federal Rights-of-Way Acts. Application for such ways is made to the Bureau of Land Management and a plat of the proposed works is submitted. Only conditional and revocable rights, called "permits", are given across reserved lands.

III. Priorities and Preferences.

- A. The Senior Appropriator is always entitled to the amount of water he has appropriated whenever he needs it, but has no claim to the remainder of the water in the source of supply.
 1. If low on the stream, he can insist that his appropriation be supplied at his headgate even though the stream losses through seepage and evaporation will be many times the amount of water he can put to beneficial use. *Albion-Idaho Land Co. v. NAF Irrigation Co.*, 97 F. (2d) 439.
 2. He is entitled to the stream in the condition in which it was in at the time of his appropriation.
 3. Any statute that would attempt to make appropriators with different priority dates share equally, or rotate water use in times of scarcity, would probably be unconstitutional. *Farmers High Line Canal Co. v. Southworth*, 13 Colo. 111.
 - a) One case gave the senior a right to the level of a reservoir from which he was taking water by gravity, but rested on the language of a pre-existing decree. *Bowles Reservoir case*.
- B. The Junior takes the stream in its natural condition, subject only to such reductions and pollution as is required by the reasonable uses of those prior to him.

1. He can restrain pollution by those senior to him, even though the pollution existed at the time he appropriated, if the polluter has not appropriated the entire stream flow and if the pollution is not necessary for the senior use. *Suffolk Gold Mining Co. v. San Miguel Mining Co.*, 9 Colo. App. 407.
2. He is entitled to the flow at such times as those senior to him cannot put it to beneficial use.
3. He may restrain any change in point of diversion or character of use of a senior if such change effects the velocity, quantity level or purity of flow past his headgate.

C. Preferential Uses.

1. Art. XVI, sec. y of the Constitution provides that those using water for domestic purposes shall have a preference over those using water for other purposes and those using water for agricultural purposes have a preference over those using water for manufacturing purposes.
2. The domestic preference has been construed only to give riparians on the streams a preference without condemnation to the limited domestic uses recognized by riparian law. *Montrose Canal Co. v. Loutsenhizer Ditch Co.*, 23 Colo. 233.
3. Preference for domestic uses of all kinds of non-riparian lands can be exercised only by the payment of compensation to those having higher priorities. *Town of Sterling v. Pawnee Ditch Extension Co.*, 42 Colo. 421.
4. Constitution does not give a power of eminent domain to private persons for water rights, but only for rights-of-way.
5. Cities have power to eminent domain to get water without regard to preference provision.

D. Reservoir and direct flow uses have equal status; first in time is first in right. *People ex rel Park Reservoir Co. v. Hinderlider* 98 Colo. 505.

IV. Adjudication and Administration.

- A. The state is divided into seven water divisions, each embracing a watershed. Each division is divided into water districts, each covering a source of supply. The administrative head is the State Engineer. Under him are Division Engineers, and under them District Water Commissioners.
- B. Water rights are adjudicated by Districts. The adjudication does not create a water right; it merely defines it and give District Water Superintendents an unassailable basis for enforcing priorities.
- C. Initial adjudication.
 - 1. Jurisdiction to adjudicate priorities rests by statute in the district court within the water district that has the first term after December 1 in the year of adjudication. It retains exclusive jurisdiction to modify the decree or make supplemental decrees, but any court can enforce the terms of the decree. *Faden v. Hubbell*, 93 Colo. 358.
 - 2. The adjudication is initiated by the filing of a petition on behalf of the owner of an unadjudicated water right.
 - 3. Notice is served by publication and by registered mail to all claimants "who have filings in the office of the State Engineer and to water users on the lists of the Water Commissioners".
 - 4. Users file statements of claim; and hearing is held by court or referee to take evidence supporting or in derogation of such claims.
 - 5. Decree is entered showing a) Source, b) Point of Diversion, c) Location of reservoir, d) Purpose, e) Priority Date, f) Amount. When filed with State Engineer such decrees are prima facie evidence of amount and date of appropriation.
- D. Supplemental adjudication.
 - 1. Service is made only on holders of unadjudicated rights.
 - 2. No priority date may be established earlier than one day after the latest priority date awarded by earlier decrees.

E. Conditional decrees may be entered where the claimant has not completed his diversion at the date of the adjudication, and permits him to avail himself of the doctrine of "relation back".

1. Conditional claimants must appear to support their rights on "adjudication day", the first day of court in even numbered years. As this day is set by law for such matters, no notice need be served of it.
2. If he doesn't appear, the conditional decree is cancelled unless he comes in within six months and explains to the satisfaction of the court his non-appearance.
3. If his diversion is completed by adjudication day, the court may make his decree final; if uncompleted but proceeding with due diligence, it may continue the conditional decree; if no diligence is shown, it may cancel it.

F. Statutes of Limitations on Decrees.

1. A decree may be opened within two years by claimant within water district who was not served with notice and who did not appear.
2. A decree may be opened within four years by persons outside the water district who did not appear in the proceedings.
3. After four years the decree may be opened only by persons with water rights beyond the jurisdiction of the court, or those who can show fraud in the adjudication proceedings. West End Irr. Co. v. Garvey, 117 Colo. 109.

G. Overflow or Meadow Land Rights must be adjudicated when proceeding held.

1. By Statute(C. R. S. 1953, 147-3-14) persons who have enjoyed natural benefits from the overflow or other operation of stream water have a water right dating from the first use of the naturally irrigated land. When the benefits are reduced by other appropriations, such persons have a right to construct ditches and divert such water as is necessary to produce the same results.

2. If the claimant of such right fails to appear in an adjudication, he loses the right to date his priority ahead of the junior right established by the decree. Broad Run Irrigation Co. v. Deuel & Snyder, 47 Colo. 573.

V. Changes in Mode of Enjoyment.

A. Changes in Point of Diversion.

1. If a right has not been adjudicated, it may be changed without court appearance. Transferee should file a new map and statement showing change in order to benefit by the presumptions which arise from the filing of the transferor. If other appropriator is injured by the change, he may enjoin, but has the burden of showing the nature and extent of his injury.
2. If right has been adjudicated, change can only be accomplished by a modification of the decree.
 - a) Petitioner for change has burden of showing lack of injury. Traditionally he has had to negative all possibilities of injury to others, but by Colorado Springs v. Yust now has to meet only the specific objections filed.
 - b) Service must be made on all water users between the old and new point of diversion and on all parties to prior adjudications.
 - c) Decree permitting change will be entered subject to such terms and conditions as are necessary to prevent injury to others.

B. Changes in place and character of use, which are not accompanied by a change in point of diversion require no judicial action except as follows:

1. Cannot change from a direct flow to storage use because the effect is to change the time of year when the water is beneficially applied. Greeley and Loveland Irrigation Co. v. Farmer's Pawnee Ditch Co. 58 Colo. 462.
2. Change from irrigation to municipal use is bad only if the consumption is increased or the period of use is changed.

3. Statute forbids change from domestic use to irrigation but has never been construed. C. R. S. 1953, 147-2-6.

VI. Extinction of Right.

A. Colorado has no forfeiture statute for non-use.

B. Water right may be abandoned.

1. Abandonment requires a cessation of use plus an intent of abandon.
2. An intent to abandon may be inferred from long unexplained non-use. (Not necessarily the period of the statute of limitations.) In *Mason v. Hills Land and Cattle Co.* 119 Colo. 404 the court said: "To rebut the presumption of abandonment there must be not only expressions of desire and hope, but some fact or condition excusing such long non-use."

C. Water right may be lost by prescription, if diversion is made by adverse user from the ditch of the senior openly, notoriously and adversely for the statutory period. *Pleasant Valley and Lake Canal Co. v. Maxwell*, 93 Colo. 73.

VII. Rights to waters which are not naturally tributary to streams.

A. Waste water from irrigation, and seepage or spring waters arising upon ones land and flowing on to the land of others are governed by C. R. S. 1953, 147-2-2.

1. Landowner has prior right to such waters whenever he needs them for use on his own land.
2. When landowner is not using them, they are subject to appropriation by lower claimants. Appropriations may be made by filing map and statement or by twenty years continuous use without such filing. Twenty years user, however, does not give one rights paramount to the landowner of the source. Lower user is not adverse to those above him unless he actually diverts water on the upper land. *Lomas v. Webster*, 109 Colo. 107.
3. If the waste water would reach a stream were it not artificially intercepted, the rights of the creator thereof are lost as soon as the waters escape him, whether he intended to

abandon his rights therein or not. Fort Morgan Reservoir & Irrigation Co. v. McCune, 71 Colo. 256. Such water is subject to the priorities of stream users whose diversions are either above or below the point of seepage return.

Where a ditch or reservoir is broken by a severe storm, however, the court has permitted the appropriator to preserve his right by a diligent restoration of his facilities. McKelvey v. North Sterling Irrigating District, 66 Colo. 11.

B. Foreign waters belong to the person who brings them into the basin.

1. Even though such waters are allowed to run to waste and flow into a stream of discharge, no rights are acquired thereto paramount to those of the developer. He is not required to continue his interbasin diversion for the benefit of those below him; lower users not adverse to him, receive only gratuitous benefits that may be terminated by his later needs.
2. Where the developer releases foreign waters that enter a stream, the Court in Coryell v. Robinson gave such waters to the users on the stream in the order of their priorities. 118 Colo. 225. Where such waters, when released, do not enter a natural stream, they would be subject to the rights created by the Waste, Seepage and Spring Water statute above.

C. Salvaged and developed waters go to the person salvaging or developing them.

1. Salvaged water is that which one saves by reducing evaporation and seepage losses in the stream.
2. Developed water is that which is added to a stream from an outside source.
3. Burden is on person claiming rights to salvaged or developed waters to show such waters were not naturally a part of the source of supply.
4. If an appropriator develops a new source of supply to supplement his appropriation, he does not lose his appropriation, but may sell such part as is in excess of his needs. Ironstone Ditch Co. v. Ashenfelter, 57 Colo. 31.

D. Diffused surface waters and collections of still waters that are neither a source of supply of or the discharge from a natural stream are subject to the proprietary rights of the owner of the land where such waters are found.

E. Underground Waters.

1. All underground waters are presumed to be part of an underground stream or a source of supply of surface streams. *Safranek v. Limon*, supra.

2. Ground waters that can be shown to be non-tributary may be subject to proprietary rights of overlying owner.

a) In *Safranek v. Limon* court said that Colorado might either extend its appropriation doctrine to cover these waters or adopt a correlative rights doctrine comparable to California.

b) Main support for the proprietary doctrines lies in the belief of many landowners in Colorado that they own the ground waters in some form. Custom is at the root of our water law. It is also arguable that these waters have not been dedicated to public use in the Constitution and thus are subject to proprietary rights.

c) Principal support for the appropriation doctrine is found in the following:

1. In the arid west water must be put to fullest beneficial use. This fact prompted Colorado court to renounce riparian law and adopt principles of appropriation for surface waters long before the adoption of the Constitution. For like reasons the appropriation doctrine may be part of the Colorado common law of ground waters.

3. Colorado has not adopted a ground water code but has required licenses of well drillers.

VIII. Tort Liability of Those Interfering with Natural Water Conditions.

A. Any one who interferes with the flow of a natural stream and causes flood or erosion damages to others is liable, even though his obstructions are made to protect his own property from floods.

B. Colorado follows the Modified Civil Law Doctrine which requires lower lands to take the natural surface run-off of upper lands, and permits the upper land owner to channel the flow upon the lower land through ditches, so long as no greater damage is done to the lower land than would have been done by nature. *Boulder v. Boulder White Rock Ditch Co.* 73 Colo. 426.

C. Liability for damages from escape of water.

1. If water escapes from a ditch, the ditchowner is liable by statute and decision in Colorado for negligence only. *North Sterling Irr. Dist, v. Dickinson*, 59 Colo. 169.
2. If it escapes from a reservoir, the owner thereof is absolutely liable by Statute, acts of God excepted, and cannot show as a defense that the reservoir had been inspected by State Engineer as is required by law. *Garnet Ditch Co. v. Sampson*, 43 Colo. 285.

D. Pollution.

1. Statute makes miner responsible for damage to lower lands from his tailings whether or not he was at fault in their reaching a natural stream. Statute however has been extended by construction to give lower landowners a right to enjoin such pollution as is injurious to them. *Wilmore v. Chain O'Mines* 96 Colo. 319.
2. Pollution will give rise to a prescriptive right against lower landowners but not against the public at large. Public nuisances cannot be justified by prescription.
3. Colorado has no anti-pollution statute of general scope. But appropriator can always enjoin or recover damages for pollution that affects the quality of the stream appropriated by him.

IX. Interstate Waters are divided equitably between the states through which they flow.

A. An equitable apportionment may be accomplished by a suit between the states in the Supreme Court of the United States, or by compacts, ratified by the legislature of the compacting states and ratified by Congress.

B. Equitable apportionment is based upon the equities of the States such as:

1. The economy of a region which has been established on the basis of junior appropriations.
 2. Physical and climatic conditions in the various sections of the river requiring effecting consumptive use.
 3. The availability of storage water.
 4. The damage to upstream areas as compared to the benefits to downstream areas if a limitation is imposed on the former.
 5. Priority of use of the several regions.
- C. Adjudications are generally too inflexible to meet changing needs, and divide the water only among existing users at the date of the proceeding, and burden the states with continued litigation. Accordingly the compact has been used to settle most interstate controversies in recent years.
- D. Compact may limit existing uses in compacting state. *Hinderlider v. La Plata River Ditch Co.*, 304 U.S. 92.
1. No right in such state can vest to more water than the equitable share to which the state is entitled.
 2. Where validity of compact is attacked, the Supreme court of the United States will put its own interpretation of the laws and constitution of the state where the compact validity is in issue rather than accept the construction placed upon such laws by the state supreme court. *West Virginia ex rel Dyer v. Sims*, 71 Sup. Ct. 557 (1951).

UNDERGROUND WATER

That Colorado has not enacted legislation regulating and controlling the use of underground water is readily apparent from the foregoing outline of legal provisions relating to Colorado's water resources. This problem has been under consideration for many years and has now become acute due to

the increased pumping caused by sharply reduced stream flow. Controversy exists, and threatens to increase in intensity, over the issue of whether increased pumping of underground water is depleting the stream flow of surface waters to the detriment of decreed rights of surface water users, and this is but one phase of the overall problem. Our dilemma is summed up as follows:

"A decision is to be made by the people of Colorado whether to adopt a ground-water code or permit themselves to drift into a chaotic situation permitting a continuance of unresolved conflicts between users of both surface and ground water." 2/

This Committee, at its public hearings, directed questions to the Acting Director of the CWCB and the Acting State Engineer regarding the need for underground-water legislation. Excerpts from this testimony are presented below:

REPRESENTATIVE STEWART: "Mr. Crawford, what suggestions do you have with respect to the development of Colorado's underground water?"

MR. CRAWFORD: "For a number of years, probably for the last seven or eight years, we have worked cooperatively with the United States Geological Survey in making surveys of underground water basins in the State of Colorado. However, we have been severely handicapped on it on account of lack of funds with which to match the federal funds available. We have applied for a number of years for \$12,500 each year. On one occasion, three years ago, I think, none--the appropriation was cut out entirely. The last two years the appropriation has been decreased from what we requested, \$12,500 to \$7,500. As a matter of fact, we are making less headway now than we did seven years ago, because in addition

2/ Colorado Needs Ground-water Legislation, W. E. Code, 1954, See Appendix C, this report.

to our appropriations decreasing, the wages and materials have gone up, and we are not able to cover as much ground as we were able to when we started out.

"Colorado, to date has appropriated altogether \$107,000 for underground surveys. The United States government has come ahead and appropriated \$107,000, so that makes \$214,000 as I remember it from those two sources. In addition to that, we have had some money given to us by the Federal Government through the Army Engineers, who in turn turned it over to the U.S.G.S. to make surveys, underground water surveys, in the South Platte district, so roughly there has been spent in the state so far about \$350,000 to obtain data on underground water. In the present budget I am asking for \$20,000 so that we will be able to get going again.....

"We have one survey being carried on in Kit Carson County on money coming from the Governor's Emergency Fund. He gave us \$5,000 from his Emergency Fund to start work there this summer. If we're going to carry this work on in the manner in which we should carry this on we should appropriate \$20,000 this year, \$30,000 the next, and gradually get up to \$50,000 a year, the government giving us a like amount each time. And in that manner, in the course of some 15 or 20 years, we would have the state well covered. And I should like to emphasize this point, that it's only because we did such things with the U.S. Geological Survey and early got the surface water data that we were able to go ahead and plan for projects at the present time, and if we don't get this data then we're just pushing the planning further off in the future in these dry areas.

CHAIRMAN BROTZMAN: "Is there any section of the state where the underground water has already been pretty thoroughly studied?"

MR. CRAWFORD: "I would say probably in the San Luis Valley. It's been pretty well studied there. They've been going since 1886; we could stand a good deal more study, but I would like to call the attention of your committee to one further conflict. It's very imminent--a very important one-- that is drilling of wells in the Arkansas Valley, and in the South Platte Valley and taking water which many people

feel is tributary to the streams, rather than the water that comes from a truly underground water basin. We're very much behind in our legal code also as regards underground water."

CHAIRMAN BROTZMAN: "Do you think that it's necessary that we have further data in regards to the underground water flow in Colorado before we enact some underground water bill?"

MR. CRAWFORD: "No, I think not. I think a code can be adjusted as time goes on. We can't make a perfect code to start with. Our miners' code was made by miners. The thing comes up -- an emergency -- and they make a law. We've already got the start of an underground water law in 1953, in S.B. No. 120, and that'll probably be amended a good deal this time, at least I hope it will. We will be amending and working for years to come, but I think a water code should be worked on immediately."

In response to the question as to whether Colorado needs additional data regarding her ground-water resources prior to enacting legislation regulating the use of ground-water, Mr. J. E. Whitten, Acting State Engineer, said:

"I feel this about the situation--the longer we delay, the further afield we are going in this connection. We are utilizing and pumping out of the ground a large resource which we do not have sufficient information on at this time to perhaps ascertain what is the safe rate of withdrawal."

Whitten further stated:

"... more data is definitely desirable, necessary and urgently needed, but I don't feel that all legislation should wait upon that. I feel that the case is critical and needs something to get a start on. We will make many mistakes undoubtedly, but we can correct them as we go. If we don't do anything, we certainly aren't trying to help ourselves. I feel that something should be done to give it a start...."

SECTION III

PUBLIC LAW 566^{1/}

WATERSHED PROTECTION AND FLOOD PREVENTION ACT

Public Law 566 is designed to deal primarily and specifically with small and tributary watersheds. Provision is made therein for mutual participation between the Federal government, state government and sponsoring groups within the states, and it is specified that the projects benefits must exceed the costs. P.L. 566 establishes a maximum of 250,000 acres, but no minimum acreage is set forth, in any one watershed or subwatershed area, with further restrictions that no single structure may provide more than 5,000 acre-feet in total capacity, and also that all structures of over 2,500 acre-feet capacity must have approval of the appropriate congressional committees.

In Colorado Governor Thornton designated the State Soil Conservation Board as the state agency to review projects which are submitted by sponsoring groups, and the Attorney General of Colorado has issued an opinion^{2/} that soil conservation districts in Colorado have legal authority to carry on all types of contractual procedures as provided for under P. L. 566.

^{1/} Public Law 566, 83d Congress, Chapter 656, 2d Session, H.R. 6788, Approved August 4, 1954. For the text of this law see Appendix D, of this report

^{2/} Opinion No. 2731-54 dated August 25, 1954.

Paul Swisher, Commissioner, Colorado Department of Agriculture, and also the state official chiefly responsible for bringing results to Colorado from Public Law 566 declared,^{3/}

"I think that this Act 566 is certainly a step in the right direction. It solves some of the problems here in the State of Colorado. Since your committee meeting here today is particularly interested in water conservation, I think it is a means of getting a job done here in Colorado. Many of the people do not know of this program (P.L. 566) and we must carry the information to them. This is not a program of grant in aid to an individual, it's something bigger than that. It is for the conservation of the soil of America . . . We have received applications, but there are many, many of the districts and people in the various parts of the State of Colorado that are not acquainted with it. I daresay down there in the valley, they're not acquainted with the program, and I know in western Colorado they have asked me about this irrigation possibility of the program, and somebody must go out there and help them get their districts organized. Now the Soil Conservation people of the district within the area will help, but the problem is bigger, sometimes these watersheds will go over one district's boundaries - the one we considered the other day covered portions of three Soil Conservation Districts."

Public Law 566, approved by the President on August 4, 1954, is a new and significant development regarding water. The Joint Legislative Committee devoted part of one of its public hearings to obtaining testimony regarding the part which this law can play in assisting Colorado to better utilize its water. In addition to Mr. Swisher, Mr. Kenneth W. Chalmers, State Conservationist for the United States Department of Agriculture and his assistant Mr. Ed

^{3/} Public Hearing, Joint Legislative Committee on Water Problems, December 29, 1954.

McCrimmon appeared before the Joint Committee to provide information on P.L. 566 and to answer questions of the Committee members.

The Joint Committee is including in its report this section on the 1954 Watershed Protection Act in order to focus additional attention on the existence of such a law. The discussion must of necessity be brief because the full set of federal rules and regulations to guide in the administration of the act have not as yet been made available and, further, the committee inquiry was limited due to the shortage of time. It is well to emphasize again that here is a new and significant development in the field of water conservation and every effort must be exerted to have Colorado take full advantage of its provisions. P.L. 566 is a "small structure" Act designed to promote water conservation and utilization through the construction of small structure and to thereby implement the water development programmed under the large scale reclamation projects.

During the December 29, 1954, hearing conducted by the Joint Committee there was much pertinent testimony regarding P. L. 566. Excerpts from that hearing are provided below for the purpose of providing a clearer understanding of the WHAT and HOW of this important Act.

SENATOR BROTZMAN: "I have several questions and perhaps members of the Committee will too. You mentioned these other sponsoring agencies in the State of Colorado, are all those Soil Conservation Districts or can they be other types of agencies as well?"

Sponsoring
Agencies:

MR. McCRIMMON: "It happens that every application that has come into the State Board and to Mr. Chalmers so far has been sponsored or co-sponsored by a Soil Conservation District. In the case of the Rifle Area, the Board sent the application back to them, and I believe it will come in with the co-sponsorship of the town of Rifle, for I was over there on the field examination and talked to Mayor and the Councilmen of the town. I believe the town will join the Soil Conservation District, the Rifle Soil Conservation District, as a co-sponsor. I believe the application in the hands of the Board now from Wray, Colorado has the co-sponsorship of the city of Wray."

Municipal
Water:

SENATOR ROGERS: "Can this law be applied to projects for domestic water supply, domestic irrigation and municipal use?"

MR. McCRIMMON: "May I interrupt at that point? Here's an official question and answer leaflet from the (Congressional) Committee itself:

Question: What about municipal water supply?

Answer: Storage for municipal water supply may be included as a part of the watershed work plan, but structural costs above those necessary for flood prevention must be paid from non-federal funds."

MR. CHALMERS: "In other words, the total costs of municipal water supplies must be paid for by the sponsoring agency."

Fiscal:

CHAIRMAN BROTZMAN: "Now, in regard to money, after this plan has been approved by Congress is the federal money a direct grant? Is there any payment obligation assumed by the local district or is that an outright grant so far as the federal matching fund is concerned?"

MR. McCRIMMON: "I'll have to answer that, Senator, with the proviso that part of it will be opinion. The real answer will have to come from the President's rules and regulations and United States Department of Agriculture policy and operating procedure (expected by March, 1955). As Ken mentioned, in the Kiowa

District it was a 50-50 deal. Actually, the total matching sum remains in my mind at this date, for I have to work it out, and through a five-year period the federal government will put in \$536,000 in terms of retarding structures, channel stabilization and other things which sum was matched in effect as contributions, present contributions and future contributions of the sponsor and the local people which the sponsor deals with. In other words, the value of conservation measures already on the land placed there by ranchers and farmers; the value of conservation measures on farm and ranch measures that will be placed thereto in the next five years; the value of easements and rights of way, incidentally, that involves sites for 140 structures in that case, and it finally comes down to exactly \$11,313.00 in cash that the sponsor has that adds up to a matching figure of \$536,000 on one side and \$536,000 on the other through a period of five years. I think under P.L. 566 it will be a different matching arrangement, but I do not know the full answer on that."

At another point in his testimony in reply to a question by Representative Keiry, McCrimmon spoke further about the 140 structures with the Kiowa project. He said,

"In case of the Kiowa project, we ourselves were severely Small criticized for the use of numerous small structures rather Structures: than any large structures, and there will eventually be in the neighborhood of 140 structures on that project. The retarding capacity of those structures is aimed at holding back, retarding .8 of an inch of moisture on the area of land involved. We finally convinced some people that the hydrologic facts were there to justify that sort of a program, and the physical facts were there so we couldn't build big structures with tremendous spillways etc. in that area. And it was approved by our Washington authorities on that basis. The largest of those 140 structures, incidentally, will be in the neighborhood of 175 acre feet, perhaps even the smallest about 6. A rough guess of the average would be between 20 and 30 acre feet per structure. We're relying on numerous small structures, comparatively small structures, rather than bigger structures in that area. We believe you can prevent damages on a much

bigger area of bottom land that way and achieve the same result."

Mr. Paul Swisher had this to say on the matter of small structures:

"Now there is one thing you should keep in mind I think, that is, in some areas of the State of Colorado this program will be very valuable in the development of small irrigation projects. Such as you mentioned before, Keiry, down below there in the valley. There are a large number of places where the projects have been so small that the Reclamation Service would not get into it because they were not interested in those small projects. Now, under this watershed protection and control project it's going to be possible for us to go ahead, with the development of a large number of those, which again will conserve a large amount of water for use in the State of Colorado."

P.L. 566
and Colorado:

MR. PAUL SWISHER: "..... we have in Colorado about 98 Soil Conservation Districts at the present time there might be a few who would not be particularly interested in this type of project, but most of them are, they are the means in this area for making a contact on this type of work ... Each year we spend about \$3,500,000 of Agricultural Conservation Program money for the regular program...but needless to say it (P.L. 566) will certainly eliminate a large amount of this government money that has been coming in here on this piecemeal program. I think it is a wonderful opportunity for Colorado at the present time to get into this type of program to conserve moisture and to greatly increase the carrying capacity and the production of the lands of Colorado...To administer this program in the State of Colorado it will be necessary for us to have somebody to work with the districts, setting up the forms and procedures that will be necessary for each one of them, if we go along with the program as fast as we should in the State of Colorado. I have requested \$10,000 for a field man (salary and expenses) to work with the districts on this type of program.

\$10,000
Appropriation
needed

In addition to the need for an additional appropriation to permit the State Soil Conservation Board to provide state wide assistance to local districts interested in qualifying under P.L. 566, Swisher and Chalmers indicated that possible statutory changes are needed, and agreed to submit the proposed amendments to the Joint Legislative Committee on Water at an early date in the First Regular Session of the Fortieth General Assembly to implement this program.

OPINION OF THE COLORADO ATTORNEY GENERAL:

August 25, 1954

Mr. Kenneth W. Chalmers, Secretary
Colorado State Soil Conservation Board
3130 Zuni Street
Denver 11, Colorado

Dear Mr. Chalmers:

Receipt is acknowledged of your recent letter, in which you request my opinion concerning the following:

FACTS: The Congress of the United States has enacted Public Law 566, 83rd Congress, Chapter 656, 2d Session, H.R. 6788, approved August 4, 1954. This bill is more popularly known as the Hope-Aiken Small Watershed Protection and Flood Prevention legislation. Under such legislation, and subsequent to July 1, 1956, local sponsoring groups, such as soil conservation districts, will be the parties who will enter into contractual relationships with private contractors and others for flood prevention construction. The local district will be granted a specified amount of money with which to complete construction according to plans approved by the Congress. The district would draw and let all contracts relating to this construction.

QUESTION: May a local soil conservation district, under the provisions of Section 8, Chapter 241, S. L. 1937, as amended by Chapter 203, S. L. 1941 and Chapter 229, S. L. 1945, as amended by Chapter 231, S. L. 1949, enter into contracts in which they would be trustees handling Federal money in addition to disbursing their own funds?

CONCLUSION: After considering the facts, the above legislation and the pertinent questions of law involved, I am of the opinion that the local soil conservation district has the authority, under the provisions of said Section 8, to enter into the type of contract contemplated by H.R. 6788, 83rd Congress, 2d Session, approved August 4, 1954, being Public Law 566.

ANALYSIS: In connection with this study, it is helpful to examine the pertinent parts of said Section 8. In particular, these are as follows:

"(d) To co-operate, or enter into agreements with, and within the limit of its available funds to furnish financial or other aid to any agency, governmental or otherwise, or any owner or occupant of lands within the district in the carrying on of erosion control, flood control and water conservation practices within the district subject to such conditions as the supervisors may deem necessary to advance the purpose of this chapter.

"(e) To obtain options upon and to acquire, or acquire control of, by purchase, exchange, lease, gift, grant, bequest, devise, or otherwise, any property, real or personal, or rights or interests therein; to maintain, administer and improve any properties acquired, to receive income from such properties and to expend such income in carrying out the purposes and provisions of this chapter; and to sell, lease, or otherwise dispose of any of its property or interests therein in furtherance of the purposes and provisions of this chapter.

"(g) To enter upon lands in the district for the purpose of treating same to prevent the spread of soil erosion and damage to other lands in such districts, subject to the provisions of section 12 hereof.

"(h) To accept grants, services and materials, and borrow money from the United States or from any corporation or agency created or designed by the United States to loan and/or grant money, or from the state of Colorado or any of its subdivisions, or from any other source, but in no event shall such district pledge the faith or credit of the state of Colorado or any county or other political subdivision, except such district. In connection with such grants and/or loans it may enter into such agreements and/or contracts as may be required for such purposes.

"(i) To take over, by purchase, lease or otherwise, and to administer any soil-conservation, erosion-control, or erosion-prevention project located within its boundaries undertaken by the United States or any of its agencies, or by this state or any of its agencies;

to manage, as agent of the United States or any of its agencies, or of this state or any of its agencies, any soil-conservation, erosion-prevention project within its boundaries; to act as agent for the United States, or any of its agencies, or for this state or any of its agencies, in connection with the acquisition, construction, operation or administration of any soil-conservation, erosion-control, or erosion-prevention project within its boundaries.

"(j) To sue and be sued in the name of the district; to have a seal, which seal shall be judicially noticed; to have perpetual succession unless terminated as hereinafter provided; to make and execute contracts and other instruments necessary or convenient to be exercise of its powers; to make, and from time to time amend and repeal, rules and regulations not inconsistent with this chapter, to carry into effect its purposes and powers.

"(k) To prepare a plan for the care, treatment and operation of the lands within the district. This plan may be known as the district program and plan to work and shall establish in general its objectives and shall serve as a guide for carrying out its work to attain its objectives. This plan may, from time to time, be changed or amended to meet the needs of the district."

To date, this legislation, creating soil conservation districts in Colorado, has been passed upon by the Supreme Court of this state only once. This was in the case of People v. Parker, 118 Colo. 13, 192 P. (2d) 417, 1948. This case involved the question of validity of formation of the district. However, in passing, the court made the following comment:

"It is thoroughly settled that a district such as the one here involved, is a public corporation, but not a city, town or municipality within the meaning of the constitutional provision. The purposes of the district, as expressly set forth in the act, are, as the trial court expressly found, primarily of a private nature for the mutual benefit of the landowners of the district. (citing cases)."

Mr. Kenneth W. Chalmers
August 25, 1954

Page 4

Also, at page 21, the court made the following comment:

"The general character of soil erosion districts and the object and purposes thereof, and the nature and extent of the authority of the district over private property in the district, is shown by the following resume of such powers and duties set forth in detail in section 8 of the act as amended. The district is authorized under the act of conduct surveys, investigations and research relating to soil conservation and of preventive and control measures needed; to conduct demonstrational projects; to erect and maintain structures and facilities for the prevention of erosion; to enter into agreements with governmental agencies in carrying on erosion control activities; to acquire by purchase or otherwise, real or personal property;"

Being a public corporation, a soil conservation district can only exercise the powers granted to it by statute. However, in light of the very broad language of said Section 8, it is my opinion that the soil conservation district can enter into the contract contemplated under the Hope-Aiken Bill as enacted, subject only to the provisions found in Subsection (h) of said Section 8. This exception requires that the district not pledge the faith or credit of the state of Colorado or any county or other political subdivision other than the district.

Very truly yours,

DUKE W. DUNBAR,
Attorney General

OG:sg

APPENDIX A

TO: SENATOR DONALD G. BROTZMAN, CHAIRMAN
JOINT LEGISLATIVE COMMITTEE
ON WATER PROBLEMS

FROM: OFFICE OF THE STATE ENGINEER,
DEPARTMENT OF WATER RESOURCES.

RE: REPORT ON WATER RIGHTS AND
IRRIGATION ADMINISTRATION

December 28, 1954

WATER RIGHTS AND IRRIGATION

STATE OF COLORADO

INDEX

	Page
Constitution of Colorado	
Sections 5-6; ART. XVI; Vol. 1 - Appropriation.....	1
Administrative Code	1
Duties of State Engineer	
Sections 3-4-5-6; ART. 11; CH.147;Vol.6.....	2
General duties	
Hydrographic surveys	
Supervision over Division Engineers & Water Commrs.	
Additional duties	
Duties of State Engineer, Cont'd.	3
Responsibility for approval of plans for reservoirs	
(Chap. 147; ART. 5: Sec. 5)	
Deputy State Engineer - powers	3
(Ch.147; Art. 11; Sec. 7)	
State Engineer, member (ex-officio) various Boards & Commissions.....	4
State Engineer, administration of Interstate Compacts	4
Irrigation Divisions - Division Engineers.....	4
(Ch. 147; Art. 12; Sec. 3)	
Boundaries of Irrigation Divisions	4
Location of Offices of Division Engineers.....	5
(Chap.147;Art.12;Sec. 4	
Division Engineers' Duties	5
(Chap. 147; Art. 12; Sec. 5)	
Water Commissioners.....	6
Appointment - Term of Office - Bond	
(Chap. 147; ART. 15; Sec. 1)	
Duties of Water Commissioners.....	7
Chap. 147; Art. 15; Sec. 2-3-4-5-	
Deputy Water Commissioners.....	8
Appointment - Oath - Bond (Chap. 147; Art. 15;Sec.7)	
Water Supplies.....	8
Irrigated agriculture & associated industries major	
industry in Colorado	

DIVISION OF WATER RESOURCES
OFFICE OF STATE ENGINEER

GOVERNOR

STATE ENGINEER

DEPUTY STATE ENGINEER

OFFICE ENGINEER

STENOGRAPHIC

ACCOUNTING

HYDROGRAPHIC

CHIEF HYDROGRAPHER

HYDROGRAPHERS

GAGE READERS

ADMINISTRATIVE

SPECIAL DEPUTY
STATE ENGINEERS

DIVISION ENGINEERS
(SEVEN DIVISIONS)

WATER COMMISSIONERS
(SEVENTY DISTRICTS)

DEPUTY WATER
COMMISSIONERS

BOARD OF REGISTRATION
FOR
PROFESSIONAL ENGINEERS
AND
LAND SURVEYORS

EX-OFFICIO SECRETARY

ASSISTANT SECRETARY

MEMBER
RIO GRANDE COMPACT
COMMISSION

COSTILLA COMPACT
COMMISSION

MEMBER
PLANNING COMMISSION

MEMBER
WATER CONSERVATION
BOARD

MEMBER
IRRIGATION DISTRICT
COMMISSION

MEMBER
BOARD OF CONSERVATION
OF COLORADO

WEATHER CONTROL
COMMISSION

DEPARTMENT OF WATER RESOURCES
• (OFFICE OF STATE ENGINEER)

CONSTITUTION OF COLORADO

ART. XVI SEC. 5.
(VOL. 1)

Water, public property.--The water of every natural stream, not heretofore appropriated, within the state of Colorado, is hereby declared to be the property of the public, and the same is dedicated to the use of the people of the state, subject to appropriation as hereinafter provided.

(This Section construed by Supreme Court to abolish common law doctrine of continuous flow (Riparian Doctrine): Water of the public streams dedicated to the use of the public and subject to appropriation as private property.)

SEC. 6. Diverting unappropriated water--Priority.--The right to divert the unappropriated waters of any natural stream to beneficial uses shall never be denied. Priority of Appropriation shall give the better right as between those using the water for the same purpose; but when the waters of any natural stream are not sufficient for the service of all those desiring the use of the same, those using the water for domestic purposes shall have the preference over those claiming for any other purpose, and those using the water for agricultural purposes shall have preference over those using the same for manufacturing purposes.

(Act of appropriation construed by Supreme Court to consist of a diversion of the water from a natural stream and the application thereof to beneficial use. Domestic use declared subject to senior rights for agricultural and manufacturing purposes, but with right of condemnation with just compensation to those whose rights are affected thereby.)

From the above constitutional provisions has developed the so-called Doctrine of Appropriation, unique to Colorado, such doctrine often being referred to as "The first in time the first in right."

ADMINISTRATIVE CODE

Anticipating the need for some agency to administer the use of the water from the natural streams, the legislature in 1881 created the office of the State Engineer: Session Laws 1889 Pg. 371 Amending Act Approved March 5, 1881. Statutes setting forth the duties of the State Engineer and his administrative force with court decisions construing the same are set forth in Vol. 6, Ch. 147 of 1953 Colorado Statutes Annotated: titled "Water Rights and Irrigation." Since this volume is readily available and contains all the statutory law, with the court decisions

construing the same, concerning the duties and functions of the Department of Water Resources (State Engineer), only the most pertinent statutes are abstracted herein.

The department has grown from its creation in 1881, with only a State Engineer and four or five employees, to its present status, with approximately 150 employees. (Organization Chart (1954) showing present staff, attached.)

Until the creation of a separate department (Highway), concerning roads and bridges, this department, in addition to the duties of the administration of the use of water from the public streams, performed all engineering functions of the state, including the design and construction of all roads and bridges.

DUTIES OF STATE ENGINEER

(Only a few of the pertinent statutes in this respect are cited here.

For additional statutes see Chap. 147, Compiled Laws 1953.)

(VOL. 6)

CHAP. 147; ART. 11; SEC. 3. General duties of state engineer.

The state engineer shall have general supervising control over the public waters of the state. He shall make or cause to be made careful measurements of the flow of the public streams of the state from which water is diverted for any purpose, and compute the discharge of the same. He shall also collect all necessary data and information regarding the location, size, cost and capacity of dams and reservoirs hereafter to be constructed, and like data regarding the feasibility and economical construction of reservoirs on eligible sites, of which he may obtain information, and the useful purposes to which the water from the same may be put. He shall also collect all data and information regarding the snowfall in the mountains each season, for the purpose of predicting the probable flow of water in the streams of the state, and publish the same.

SEC. 4. Hydrographic surveys.

The state engineer shall make hydrographic surveys and investigations of each stream, system and source of water supply in the state, beginning with those most used, and obtaining and recording all available data pertaining to the water supply of this state. He is hereby authorized to co-operate with the United States geological survey for this purpose.

SEC. 5. Supervision over division engineers and water commissioners.--

The state engineer shall have general charge over the work of the irrigation division engineers and district water commissioners, and shall furnish them with all data and information necessary for the proper and intelligent discharge of the duties of their offices, and shall require them to report to him at suitable times their official actions, and require of them annual statements, on blanks to be furnished by him, of the amount of water diverted from the public streams in their respective divisions and districts, and such other statistics as, in the judgment of the state engineer, will be of benefit to the state.

SEC. 6. Additional duties of engineer.--

The state engineer shall perform all duties imposed upon him by law, and when called upon by the governor, shall give his counsel and services to any state department or institution; provided, however, that he shall be allowed all actual traveling and other necessary expenses, and the actual cost of preparing necessary maps and drawings, which actual expenses shall be paid by the department or institution requiring his services.

CHAP. 147; ART. 5; SEC. 5. Approval of plans for reservoir.

No reservoir of a capacity of more than one thousand acre-feet or having a dam or embankment in excess of ten feet in verticle height, or having a surface area at high water line in excess of twenty acres shall hereafter be constructed in this state except that the plans and specifications for the same shall have first been approved by the state engineer and filed in his office. The state engineer shall act as consulting engineer during the construction thereof, and shall have authority to require the material used and the work of construction to be done to his satisfaction. No work shall be deemed complete until the state engineer shall furnish to the owners of such structures a written statement of the work of construction and the full completion thereof, together with his acceptance of the same, which statement shall specify the dimensions of such dam and capacity of such reservoir.

CHAP. 147; ART. 11; SEC. 7. Deputy State Engineer--powers.

The state engineer shall appoint a deputy state engineer subject to the provisions of Article XII, section 13, of the constitution of the state of Colorado relating to civil service; whose duties shall be to assist the state engineer in the administration of his office. The deputy state engineer shall have power to act for the state engineer in all his official duties, including the administration of interstate river compacts, during the absence of the state engineer from his office or when so directed by the state engineer

The salary of the deputy state engineer shall be paid as the salaries of the officers of the executive department of the state are paid. He shall also receive reimbursement monthly for the actual necessary expenses incurred in the performance of his official duties, as shall be allotted by the state engineer from funds appropriated for such purpose. The state controller is hereby authorized to pay warrants for said salary and expenses upon vouchers approved by the state engineer.

The deputy state engineer, before entering on the discharge of his duties, shall take and subscribe to an oath before the judge of a state court of record, to faithfully perform the duties of his office, and file said oath with the secretary of state, together with his official bond, in the penal sum of ten thousand dollars, said bond to be executed by a responsible surety company authorized to do business within the state and conditioned upon the faithful discharge of the duties of his office.

The State Engineer is a member (ex-officio) of the following Boards and Commissions:

Member and Chairman	-	Irrigation District Commission
Member and Secretary	-	Public Irrigation District Commission
Member	-	State Planning Commission
Member	-	Colorado Water Conservation Board
Member and Secretary	-	State Bd. of Registration for Professional Engineers
Member and Secretary	-	State Bd. of Examiners for Land Surveyors
Member	-	Weather Control Commission

Each of these Boards or Commissions require that considerable time be spent by the State Engineer or his Deputy in the performance of the duties assigned. Office of the Boards of Registration for Engineers and Land Surveyors is located in the state engineer's office, with two full-time employees. (Copy of Law, Roster and last report of the Board submitted herewith).

The State Engineer is the chief administrative officer, and through his office and employees administers the following interstate Compacts:

La Plata River Compact	- Colorado-New Mexico
South Platte River Compact	- Colorado-Nebraska
Rio Grande Compact	- Colorado-New Mexico-Texas
Republican River Compact	- Colorado-Nebraska-Kansas
Costilla Creek Compact	- Colorado-New Mexico

The Arkansas River Compact (Colorado-Kansas), is administered by a commission, one member of which is the Director of the Colorado Water Conservation Board. It is apparent that the State Engineer, since he is the chief administrative officer of the use of water from the public streams and has the organization and a staff for such purpose, should be the administrator for the Arkansas River Compact, as is the case in all other interstate Compacts.

The Colorado River Compact and Upper Colorado River Compact are not administered by the State Engineer.

(Copies of Compacts submitted herewith)

Supreme Court Decrees. The State Engineer administers the Laramie River and also the North Platte River, in accordance with decrees of the United States Supreme Court.

(Copies of decrees attached)

IRRIGATION DIVISIONS

DIVISION ENGINEERS

There are seven irrigation divisions of the State, defined by statute to conform to the major stream drainages. Each division has an office located in the Division and in charge of a Division Engineer.

CHAP. 147; ART. 12; SEC. 3. Boundaries of irrigation divisions.

Irrigation divisions are hereby created as follows:

- (1) Division one shall comprise all water districts consisting of lands in the state of Colorado irrigated by water taken from the South Platte river, the North Platte river, the Big Laramie river, the north and middle forks of the Republican river, Sandy and Frenchman's creeks, and the streams draining into said rivers and creeks.
- (2) Division two shall comprise all water districts consisting of lands irrigated by water taken from the Arkansas river, the south of the Republican river, the Smoky Hill river, and the Dry Cimarron river, and the streams draining into said rivers.
- (3) Division three shall comprise all water districts consisting of lands irrigated by water taken from the Rio Grande river and its tributaries.
- (4) Division four shall comprise all water districts consisting of lands irrigated by water taken from San Juan river and its tributaries, and also all water districts consisting of lands irrigated by the Grand river and its tributaries, below the mouth of Roan creek, including water district numbered 42.

- (5) Division five shall comprise all water districts consisting of lands irrigated by water taken from the Grand river and its tributaries above and including Roan creek and water districts numbered 39 and 45, and also all water districts consisting of lands irrigated by water taken from the Green river and its tributaries.
- (6) Division six shall comprise all water districts consisting of lands irrigated by water taken from the White river, the Yampa or Bear river, the Green river and all their tributaries; and shall include water districts 43, 44, 54, 55, 56 and 57.
- (7) Division seven shall comprise all lands within water districts numbered 29, 30, 31, 32, 33, 34, and 69.

CHAP. 147; ART. 12; SEC. 4. Location of offices.

The office of the irrigation division engineers shall be located as follows:

- (1) Division one at the state capitol building in Denver;
- (2) Division two in Pueblo;
- (3) Division three in Alamosa;
- (4) Division four in Montrose;
- (5) Division five in Glenwood Springs;
- (6) Division six in Steamboat Springs;
- (7) Division seven in Durango.

Each irrigation division engineer shall be provided, as other state officers are provided, with a suitable office, together with necessary supplies and equipment for the proper transaction of business and preservation of records of the irrigation division.

Each office shall be used exclusively for the business of the state of Colorado and shall be open during all ordinary business hours except when the duties of the division engineer require his absence, in which instance notice of his whereabouts shall be posted at said office.

DIVISION ENGINEER'S DUTIES

CHAP. 147; ART. 12; SEC. 5. Division engineer--duties.

The duties of the irrigation division engineer shall be as follows:

He shall be governed by all laws relative to irrigation division engineers and shall have general control over the water commissioners of the several districts within his division. Under the general supervision of the state engineer he shall execute the laws of the state relative to the distribution of water, in accordance with the right of priority of appropriation as established by judicial decrees. In the distribution of water, he shall be governed by the regulations of this chapter, and laws that are now in force, but for the better discharge of his duties, he shall have the authority to make such other regulations to secure the equal and fair distribution of water, in accordance with the rights of priority of appropriation, as, in his judgment, may be needed in his division. Such regulations shall not be in violation of any part of this chapter, or other laws of the state, but shall be merely supplementary to and necessary to enforce the provisions of the general laws and amendments thereto. Any person, ditch company, or ditch owner, who may deem himself

injured or discriminated against by any such order or regulation of such irrigation division engineer shall have the right to appeal from the same to the state engineer, by filing with the state engineer a copy of the order or regulation complained of, and a statement of the manner in which the same injuriously affects the petitioner's interest.

The state engineer, after due notice, shall hear whatever testimony may be brought forward by the petitioner, either orally or by way of affidavits, and through the irrigation division engineer shall have power to suspend, amend or confirm the order complained of. He shall have the right to call out any water commissioner of any water district within his division, at any time he may deem it necessary, and he shall have the power to perform the regular duties of water commissioner in all districts within his division

Each irrigation division engineer shall devote his entire time to the work of his office and in stream measurement, ditch and canal rating, examination of ditches and reservoirs, collection of information relating to the supply and use of water, proper preservation and indexing of data and records and any other duties which may be of him required by law or directed by the state engineer, or which will tend to facilitate and improve the distribution and use of water within his division. He shall require the water commissioner to make annual reports as required by law, on or before the fifteenth day of November of each year.

All records and data collected by the irrigation division engineer shall be the property of the state of Colorado and shall be open to public examination and use during all business hours, except when the division engineer is necessarily absent as provided in section 147-12-4, and it shall be unlawful for any division engineer to engage in any other business or private engineering practice, and he shall not hold or perform the duties of any other office.

WATER COMMISSIONERS

APPOINTMENT - TERM OF OFFICE - BOND

CHAP. 147; ART. 15; SEC. 1. Appointment-term of office-bond.

There shall be one water commissioner for each water district, and for each district hereafter formed, who shall be appointed by the governor, to be selected by him from persons recommended to him by the several boards of county commissioners of the counties into which the water district may extend, subject to the provisions of article XII, section 13, of the constitution relating to civil service. When a vacancy exists the state engineer may appoint and designate a commissioner in another water district to perform the necessary services in the district where the vacancy exists.

Each water commissioner, before entering upon the discharge of his duties, shall take and subscribe to an oath before the judge of a state court of record, to faithfully perform the duties of his office, and file said oath in the office of the secretary of state, together with his official bond, in the penal sum of one thousand dollars, said bond to be executed by a surety company authorized to do business within the state, and conditioned upon the faithful discharge of the duties of his office.

DUTIES OF WATER COMMISSIONERS

CHAP. 147; ART. 15; SEC. 2. Commissioners to devote entire time--neglect.

It is hereby made the duty of the water commissioner after being called upon to distribute water, to devote his entire time to the discharge of his duties when such duties are required, so long as the necessities of irrigation in his district shall require; and it is made his duty to be actively employed on the line of the streams in his water district, supervising and directing the putting in of headgates, wastegates, keeping the stream clear of unnecessary dams or other obstructions, and such other duties as pertain to a guard of the public streams in his water district.

SEC. 3. Duty of commissioners--open and shut headgates.

It shall be the duty of said water commissioners to divide the water in the natural streams of their district among the several ditches taking water from the same, according to the prior rights of each respectively; in whole or in part to shut and fasten, or cause to be shut and fastened, by order given to any sworn assistant, sheriff or constable of the county in which the head of such ditch is situated, the headgates of any ditch heading in any of the natural streams of the district, which, in a time of a scarcity of water, shall not be entitled to water by reason of the priority of the rights of others below them on the same stream.

SEC. 4. Powers of water commissioners.

In the discharge of their duties, water commissioners shall be invested with the powers of constables, and may arrest any person violating his order relative to the opening or shutting down of headgates, or the using of water for irrigation purposes, and take such offender before the nearest justice of the peace, who, if such offender be convicted, may fine him in any sum not exceeding one hundred dollars, and, in default of the payment of such fine, may imprison him in the county jail not exceeding thirty days; provided, that the orders of the irrigation division engineers in their respective divisions, and the orders of the state engineer, shall be held at all times superior to the orders of water commissioners, and shall relieve any person acting in accordance with such superior orders from the penalties provided in section 147-15-9; and, provided that in like manner the orders issued by the state engineer shall be held superior to any order issued by any irrigation division engineer.

SEC. 5. Compensation of water commissioners and deputies.

The water commissioners and deputy water commissioners of water districts shall be paid a salary fixed pursuant to Article XII, section 13, of the state constitution, and paid out of the general fund of the state as the salaries of the executive officers of the state are paid.

The compensation of water commissioners and deputy water commissioners shall be paid on a per diem basis for each day actually employed in the discharge of their official duties.

Deputy water commissioners shall work only such times as directed by the water commissioner with the approval of the irrigation division engineer, or the state engineer.

A water commissioner shall not employ a deputy water commissioner except upon the approval of the state engineer, subject to the civil service amendment.

SEC. 6. Commissioner and assistants account for time.

Each water commissioner paid on a per diem basis and each deputy water commissioner shall keep a just and itemized account of the time spent by him in the discharge of the duties of his office, and for each month each water commissioner shall present for payment a true and verified statement of his time, said statement to be approved by the irrigation division engineer, or the state engineer. For each month each deputy water commissioner shall present for payment a true and verified statement of his time, approved by the water commissioner of his water district, and also approved by the irrigation division engineer, or the state engineer.

DEPUTY WATER COMMISSIONERS

APPOINTMENT - OATH - BOND

CHAP. 147; ART. 15; SEC. 7. Deputies--oath--bond.

Deputy water commissioners may be appointed by the water commissioner with the approval of the state engineer, subject to the provisions of article XII, section 13, of the constitution of the state of Colorado relating to civil service.

Deputy water commissioners shall qualify before entering on the discharge of their duties by taking the usual oath of office and giving bond, executed by a surety company approved to do business within the state, for the faithful performance of the duties of their office in the sum of one thousand dollars, which oaths of office and bonds shall be filed in the office of the secretary of state.

(Map of the State, showing Irrigation Divisions & Water Districts, submitted herewith).

(List of Water Districts, Boundaries also submitted; see addendum)

WATER SUPPLIES

Irrigated agriculture, with its associated industries, is the major activity of the people of Colorado, and doubtless will continue to be. This greatest source of wealth depends upon the efficient use of the natural water supplies of the state. Such uses require efficient, impartial and intelligent administration. The necessity for a department of the state, charged with such responsibilities, was recognized by the people when they caused this department to be created in 1881.

The natural water supplies of Colorado are the state's most valuable resource, hence the protection, conservation and efficient use of the same are of vital concern to our citizens. The state is so situated with respect to the water produced by the Rocky Mountains that not only does practically all of the water used in Colorado originate within its borders, but several of the arid or semi-arid states surrounding Colorado depend, in some degree, upon waters originating in this state.

Irrigation development in some portions of our state has progressed to the point when, at the present time, there is a crying need for supplemental water supplies to stabilize such development. As a result, two problems of major importance confront the residents of this state, namely, the protection of present and future uses of water originating in Colorado against undue encroachments by other states, and the proper conservation of these water supplies, that they may be used in the most efficient manner. The vital importance of these problems, affecting as they do the well-being of the present and future citizens of our state, makes them of great public concern, and their solution one of the foremost functions of the state government.

This department for many years has been interested in these problems. Under the law, previous to the creation of the State Water Conservation Board, (Chap. 265 Session Laws 1937) the State Engineer was charged with the duty of making an inventory of all the natural water supplies of the state, and the devising of a comprehensive plan for the efficient use of such supplies in the interest of the common good. Much work, looking to this end, has been accomplished in the past, and repeated requests to the legislature were made for adequate appropriations to carry on this work, without much success.

In 1929 and 1930 this office made a comprehensive study and report on the available water supplies, uses and deficiencies of the South Platte River Basin in Colorado, and the means for and the estimated cost of further conservation of such supplies. This investigation was made in cooperation with the U. S. Corps of Engineers and certain local agencies. (Report submitted herewith).

Preliminary studies were made covering the available water supplies of the Colorado River Basin in Colorado; also covering the Rio Grande and Arkansas River Basins. Due to lack of funds and the delegation of some of these duties to the Colorado Water Conservation Board, the work was curtailed by this department. Volumes of data are available in this department in this connection, but has not to date been correlated or published.

The State Water Conservation Board, and also the State Planning Commission have valuable data concerning the extent, development and use of the waters of the state. U. S. Government agencies, including the Bureau of Reclamation and Corps of Engineers have made exhaustive studies and reports in this connection.

IT IS SUGGESTED THAT COLORADO SHOULD APPROPRIATE SUFFICIENT FUNDS
TO CORRELATE ALL AVAILABLE DATA, SECURE WHATEVER ADDITIONAL DATA
IS NECESSARY TO FORMULATE A BROAD AND COMPREHENSIVE PLAN FOR THE
FUTURE DEVELOPMENT AND USE OF THIS VALUABLE NATURAL RESOURCE.

COMMENTS REGARDING REORGANIZATION PLANS FOR STATE GOVERNMENT

It is assumed that the consolidation of State Departments under a so-called reorganization plan would be predicated mainly on greater efficiency and a saving in cost to the tax payers. With the idea in mind that such a plan would mean a consolidation of this department with other state departments, the following comments are made:

Any proposed legislation should not materially change the present administrative code. It is our opinion, concurred in by a consensus of opinion of the water users that the state will always have to provide some agency for the administration of its water supplies, and that such agency, whatever titled, should be an independent and distinct unit of the executive branch of our state government.

Under the present state Water Code, the State Engineer and subordinate officials are charged with the duties and responsibilities of accounting for, and the distribution of the natural water supplies of the state in accordance with court decrees. In practically all litigation between water users since Colorado became a state, and in which hundreds of thousands of dollars have been expended by the

jurisdiction thereof may permit separate adjudication proceedings for each source, anything herein contained to the contrary notwithstanding. As used herein, "distinct sources of water" shall mean two or more natural stream systems or other sources of water in any water district which do not join within the boundaries of such water district. In case of such distinct sources of water, each source may be considered as though it constituted a separate water district for all purposes of adjudication and transfer suits, including the giving of notice of such suits.

UNDERGROUND WATER

Colorado has no statutory provisions in reference to the appropriation, use or administration of the waters developed from underground sources.

The use of ground water in Colorado has developed rather slowly. Until the present drouth period commenced in 1931, only some 650 wells were being pumped for irrigation in Colorado. A large number of artesian wells were in existence, principally in the San Luis Valley.

The number of pumped wells had increased to about 2900 by 1940, and by 1950, it is estimated there were 5000 pump wells in operation, and a further increase to over 7500 by 1954.

The equivalent of 300,000 acres of land is being irrigated from these pumped wells. Ever since about 1930 much thought has been given to the enactment of a general ground water code in Colorado, but due to many conflicting opinions and interests the matter to date has not been resolved.

Critical areas are now developing. Along the plains in areas adjacent to the South Platte and Arkansas rivers, where pump wells have been developed for irrigation purposes, the withdrawals are exceeding the recharge. In both of these areas there is definite evidence of interference with surface supplies, and in some reaches of these rivers and their tributaries, the streams have changed from effluent to influent in character during periods of heavy pumping.

Demands have been repeatedly made upon the water officials, by the owners of decreed rights from the surface streams, for some regulation of the use of water by pumping. The water officials have, in the past, refused to act to regulate the use of underground waters on the ground that there is no statutory authority for any such regulation or administration of such water.

The State Engineer has, and is, accepting for filing in his office, claims to water developed from underground sources by means of wells, in the absence of any statutory provision for such filing. Such claims being accepted merely as a matter of record and showing the intent, etc. of the claimants to appropriate such water.

Any legislation in this respect should place the administration in this department, and adequate provision made for sufficient funds to fully comply with the provisions of the law.

EXCERPT OF COLORADO REVISED STATUTES 1953; PAGE 478; CHAP. 147

"...In Colorado it is the presumption that all ground water situated in the basin or watershed of a stream is tributary to the stream and subject to the appropriation of the waters of the stream; and the burden of proof to the contrary is on one asserting that such ground water is not tributary. *Safranek v. Town of Limon* (1951) 123 C. 330, 228 P.2d 975.

DeHaas v. Benesch (1947) 116 C. 344, 181 P.2d 453.

Dalpez v. Nix (1935) 96 C. 540, 45 P.2d 176.

Leadville Mine Development Co. v. Anderson (1932) 91 C. 536, 17 P.2d 303.

Hewius v. Smith (1929) 86 C. 178, 279 P. 44.

Comrie v. Sweet (1924) 75 C. 199, 225 P.2d 214.
In re German Ditch Co. (1914) 56 C. 252, 139 P.2.
Comstock v. Ramsay (1913) 55 C. 244, 133 P. 1107.
Medano Ditch Co. v. Adams (1902) 29 C. 317, 68 P. 431.
Bruening v. Dorr (1896) 23 C. 195, 47 P. 290.

Underground currents of water which flow in well defined channels the course of which can be traced, are subject to the same rules of law as streams flowing upon the surface; the existence of such streams are defined and known within the meaning of the law, though invisible, where their course and flow are determined by reasonable inference. Medano Ditch Co. v. Adams (1902) 29 C. 317, 68 P. 431."

IRRIGATION STATISTICS

The present irrigated area in the state is 2,943,895 acres, while the total irrigated and irrigable area under presently constructed canal systems is about 4,500,000 acres, distributed throughout the state as follows:

AREAS IRRIGATED - 1949 (From U. S. Bureau of Census Reports)

<u>BASIN</u>	<u>AREA IRRIGATED IN ACRES</u>
South Platte River	929,706
Republican River	6,517
North Platte River	141,953
Laramie River	5,760
Arkansas River	461,146
Rio Grande	592,645
San Juan River	148,502
Dolores River	36,145
Gunnison River	269,397
Colorado River	263,522
Green River	691
White River	29,911
Yampa River	45,172
Little Snake & Elk River	12,828
Total for State - - - - -	2,943,895

HYDROGRAPHIC DEPARTMENT

Water Resources Department
(State Engineer)

The Water Resources Department maintains a hydrographic department consisting at the present time of a chief hydrographer, four hydrographers, and one office hydrographer.

This department is operated under the specific direction of the State Engineer and as an integral part of the Water Resources Department, under a cooperation agreement with the United States Geological Survey, under a yearly agreement, and on a dollar for dollar basis. Following is a statement of the Chief Hydrographer:

"Each dollar spent by the State of Colorado on field and office work, traveling operation and maintenance of stream gaging stations for the collection and compilation of stream flow records, is matched by the Federal government, through the U. S. Geological Survey, and expended for similar collection of stream flow data in this state.

During the last fiscal year our expenditures for hydrographic work, collecting and computing stream flow records, amounted to \$38,500. The U. S. Geological Survey matched this amount by federal expenditures which boosted the total to \$77,000 for stream gaging.

Some 294 stream gaging stations were maintained in Colorado last year. Additional financing by Federal agencies was contributed by the U. S. Bureau of Reclamation and the U. S. Army Corps of Engineers toward the total stream gaging program in this state. The Water Conservation Board also put up about \$6,500 in funds to be matched by the U.S.G.S. for operation of stations to obtain data for investigation of future projects. In addition to stream gaging work the hydrographic department rates and measures canals, ditches and reservoir outlets keeping rating table current for use of the Water Commissioners in their administrative duties.

There are 30 transmountain diversion ditches in this state bringing water from one stream basin into another basin. Measurements and daily discharge records of these diversions are obtained each year."

TRANSMOUNTAIN DIVERSIONS

(See attached reports by Chief Hydrographer) Page 17. Page 18.

1. Related Runoff for Colorado Streams, for Water Year Oct. 1, 1952 to September 30, 1953.
2. Trans-mountain Diversions into South Platte River Basin for Water Year Oct. 1, 1952 to Sept. 30, 1953.

Trans-Mountain Diversions into Rio Grande Basin for Water Year Oct. 1, 1952 to Sept. 30, 1953.

Trans-Mountain Diversions into Arkansas River Basin for Water Year Oct. 1, 1952 to Sept. 30, 1953

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FINANCIAL STATEMENT

-WATER RESOURCES DEPARTMENT-

Following is an abstract of the budget requests for the department for the fiscal year July 1, 1955 to June 30, 1956:

"It has long been apparent that the efficiency of the department has been seriously handicapped through the lack of adequate staff compensated in accordance with required technical ability and the service to be rendered to the public.

Initiated by the present head of the department and sponsored by the Colorado Water Users Association, a revised budget will be presented covering requested appropriations for the fiscal year July 1, 1955 to June 30, 1956. This budget will include additional required personnel and a complete revision of classification and salaries to conform to similar schedules in this and other states."

STATE OF COLORADO
DIVISION OF WATER RESOURCES
OFFICE OF STATE ENGINEER

APPROPRIATIONS AND EXPENDITURES FOR PAST AND PRESENT FISCAL YEARS
AND BUDGET REQUESTS FOR APPROPRIATIONS FOR FISCAL YEAR COMMENCING JULY 1, 1955

	1953-1954		1954-1955		1955-1956 Require- ments
<u>MAIN OFFICE</u>	Appropriated	Expended	Appropriated	Expenditures Estimated	Requested
Personal services	\$ 120,000.00	123,313.93	130,542.00	130,542.00	154,025.00
Maintenance & Operation	27,250.00	22,042.94	28,000.00	28,000.00	30,550.00
Capital Outlay	2,000.00	2,484.97	2,000.00	2,000.00	4,000.00
State's Share to Employees Retirement Fund	5,750.00	5,564.95	6,317.00	6,317.00	6,981.25
Rio Grande Stream Gaging Stations	5,000.00	4,116.26	500.00	500.00	500.00
Administration of Rio Grande & Costilla Creek Interstate Compacts	6,000.00	4,973.37	4,000.00	4,000.00	5,000.00
TOTALS	<u>\$166,000.00</u>	<u>162,496.42</u>	<u>171,359.00</u>	<u>171,359.00</u>	<u>201,056.25</u>
 <u>Water Commissioners & Deputies:</u>					
Personal Services	\$200,000.00	204,932.40	208,000.00	217,331.00	248,855.00
Maintenance & Operation	40,000.00	44,697.03	40,000.00	46,000.00	55,000.00
State's Share to Employees Retirement Fund	4,000.00	3,731.73	5,000.00	5,000.00	6,000.00
TOTALS	<u>\$ 244,000.00</u>	<u>253,361.16*</u>	<u>253,000.00</u>	<u>**268,331.00</u>	<u>309,855.00</u>
GRAND TOTALS	<u>\$ 410,000.00</u>	<u>415,857.58</u>	<u>424,359.00</u>	<u>439,690.00</u>	<u>510,911.25</u>

*Deficit of \$9,361.16 made up from Special Appropriations S.B. #297 & \$4,428.76 from Governor's Emergency Fund.

**Will request deficiency appropriation from next Legislature.

PRESENT STAFF - WATER RESOURCES DEPARTMENT

<u>POSITION</u>	<u>CLASSIFICATION</u>	<u>GRADE</u>	<u>SALARY</u>	
			<u>MIN.</u>	<u>MAX.</u>
State Engineer	State Engineer	19	\$7116.00	\$9084.00
Deputy State Engineer	Depty. State Engr.	17	6216.00	7944.00
Division Engineer - Div. No. 1	Engineer P-IV	15	5424.00	6936.00
Division Engineer - Div. No. 2	Engineer P-IV	15	5424.00	6936.00
Chief Hydrographer	Engineer P-IV	15	5424.00	6936.00
Division Engineer - Div. No. 3	Engineer P-III	14	5064.00	6456.00
Division Engineer - Div. No. 4	Engineer P-III	14	5064.00	6456.00
Division Engineer - Div. No. 5	Engineer P-III	14	5064.00	6456.00
Division Engineer - Div. No. 6	Engineer P-III	14	5064.00	6456.00
Division Engineer - Div. No. 7	Engineer P-III	14	5064.00	6456.00
Special Deputy State Engineer	Engineer P-III	14	5064.00	6456.00
Special Deputy State Engineer	Engineer P-III	14	5064.00	6456.00
Office Engineer	Engineer P-III	14	5064.00	6456.00
Hydrographer	Engineer P-II	12	4416.00	5616.00
Hydrographer	Engineer P-II	12	4416.00	5616.00
Hydrographer	Engineer P-II	12	4416.00	5616.00
Hydrographer	Engineer P-II	12	4416.00	5616.00
Office Hydrographer	Engineer P-I	10	3852.00	4932.00
Office Hydrographer	Engineer P-I	10	3852.00	4932.00
Accountant	Accountant I	7	3144.00	4008.00
Stenographer	Clerk-Steno. II	5	2748.00	3504.00
Stenographer	Clerk-Steno. II	5	2748.00	3504.00

(WATER COMMISSIONERS)

<u>Water Commissioner</u>				
District No. 1	Commissioner II	8	3360.00	4284.00
District No. 2	Commissioner II	8	3360.00	4284.00
District No. 3	Commissioner III	9	3600.00	4596.00
District No. 4	Commissioner II	8	3360.00	4284.00
District No. 5	Commissioner II	8	3360.00	4284.00
District No. 6	Commissioner II	8	3360.00	4284.00
District No. 7	Commissioner I	7	3144.00	4008.00
District No. 8	Commissioner I	7	3144.00	4008.00
District No. 9	Commissioner I	7	3144.00	4008.00
District No. 10	Commissioner I	7	3144.00	4008.00
District No. 11	Commissioner I	7	3144.00	4008.00
District No. 12	Commissioner I	7	3144.00	4008.00
District No. 15	Commissioner I	7	3144.00	4008.00
District No. 16	Commissioner II	8	3360.00	4284.00
District No. 17	Commissioner II	8	3360.00	4284.00
District No. 18	Commissioner I	7	3144.00	4008.00
District No. 40	Commissioner II	8	3360.00	4284.00
District No. 64	Commissioner II	8	3360.00	4284.00
District No. 67	Commissioner I	7	3144.00	4008.00

(Above Commissioners' services required entire year - hence classified and paid on an annual basis.)

WATER COMMISSIONERS IN FOLLOWING DISTRICTS PAID A PER DIEM OF \$10.00. EMPLOYMENT VARIES DUE TO NEED FOR SERVICES WHICH VARIES FROM YEAR TO YEAR: Dist. No. 13-18-20-21-22-23-24-25-26-27-28-29-30-31-33-34-35-37-38-39-40-41-42-43-44-45-47-48-49-50-51-52-53-54-57-58-59-60-61-62-64-65-67-68-69-70.
(No Commissioners in Districts Nos. 32-36-46-55-56-63-66)

DEPUTY WATER COMMISSIONERS

Paid a Per Diem of \$8.50

(Employment varies due to need for services)

There are 57 Deputies. The following tabulation shows the number in each District:

<u>DISTRICT NO.</u>	<u>NUMBER OF DEPUTIES</u>
1	1
2	1
3	1
4	1
5	1
6	2
10	1
11	1
12	2
13	1
15	1
16	6
17	1
19	2
20	2
21	1
22	1
23	1
24	1
33	1
38	1
40	15
41	1
42	7
45	2
47	1
48	1

NOTE: Previous to 1945 all Commissioners & Deputies were paid by Counties.

RELATED RUNOFF FOR COLORADO STREAMS
For Water Year October 1, 1952 to September 30, 1953
(Compiled by L. T. Burgess, Chief Hydrographer, State Engineer's Office)
June 1954

Stream	Total Runoff		July to Sept. (Incl.) Runoff		Number of Years of Record
	Acre- feet	Per Cent of Mean	Acre- feet	Per Cent of Mean	
South Platte River at South Platte*	196,700	64	87,540	89	62
Clear Creek at Golden	140,700	81	47,090	79	44
*Cache la Poudre River at Canon** Mouth near Fort Collins	188,680	63	67,930	79	70
St. Vrain Creek at Lyons	66,360	68	22,010	69	64
Arkansas River at Canon City	468,800	89	150,610	93	66
Rio Grande River near Del Norte	415,700	61	75,070	43	64
Saguache Creek near Saguache	41,650	70	11,070	70	40
Conejos River near Mogote	163,300	63	17,380	33	51
Colorado River at Glenwood Springs	1,589,000	76	360,300	75	54
Blue River at Dillon	78,620	92	21,790	80	43
Dolores River at Dolores	195,100	59	37,970	77	44
Yampa River at Steamboat Springs	285,300	83	28,980	81	48
White River near Meeker	455,400	99	75,170	83	50
Animas River at Durango	391,900	82	72,310	50	55
La Plata River at Hesperus	22,280	65	2,879	59	39

*Corrected for storage.

**Corrected for diversion above station.

Note: Runoff is the amount of water which passes a given point of measurement during a stated period of time at the rate of one cubic foot per second. An acre-foot is an amount of water necessary to cover one acre of ground to the depth of one foot. The mean runoff is the average runoff for the number of years shown. The percent of mean is the ratio of the runoff for the year shown to the mean runoff for the entire period of record.

STATE ENGINEER OF COLORADO

Trans-Mountain Diversions into South Platte River Basin
for Water Year October 1, 1952 to September 30, 1953

Compiled March 10, 1954, by L. T. Burgess, Chief Hydrographer

Ditch or Tunnel	Diversion From	Total Acre Feet
Hoosier Pass Tunnel	Blue River	4840
Boreas Pass Ditch		273
Berthoud Pass Ditch	Fraser River	594
Moffat Tunnel	Discharge at E. Portal	35,070
Williams Fork Tunnel	Williams Fork	7,420
Adams Tunnel	Colorado River	180,000
Eureka Ditch	Colorado River	26
Grand River Ditch	Colorado River	19,750
Michigan Ditch	Michigan River	1,450
Cameron Pass Ditch	Michigan River	125
Skyline Ditch	Laramie River	4,790
Laramie-Poudre Tunnel	Laramie River	14,450
Lost Lake Ditch	Laramie River	0
Deadman Ditch	Laramie River	871
Sand Creek Ditch	Lar. River & Sand Crk.	2,030
Bob Creek Ditch	Laramie River	0
Columbine Ditch	Laramie River	0
TOTAL ACRE FEET		271,689

Trans-Mountain Diversions into Rio Grande Basin
for Water Year October 1, 1952 to September 30, 1953

Compiled December 29, 1953 by L. T. Burgess, Chief Hydrographer

Ditch	Stream	Total Acre Feet
Piedra Pass	Piedra Creek	42
Tabor (Spring Creek)	Cebolla Creek	182
Squaw Pass	Williams Creek	192
Treasure Pass	Wolf Creek	96
Weminuchi Pass (Fuchs)	North Fork Pine River	381
Raber-Lohr	Rincon-LaVaca Creek (Trib. Pine River)	1,338
TOTAL ACRE FEET		2,231

Trans-Mtn. Diversions into Ark. River Basin for Water Yr. Oct. 1, '52 to Sept. 30, '53
(Compiled December 29, 1953, by L. T. Burgess, Chief Hydrographer)

Ditch or Tunnel	Stream	Tot. Ac. Ft.	Ditch or Tunnel	Stream	Tot. Ac. Ft.
Buske-Ivanhoe Tunnel	Frying Pan	5,080	Fremont Pass Ditch	Ten Mile	0
Columbine Ditch	Eagle River	1,040	Twin Lakes Tunnel	Roaring Fk.	40,300
Ewing Ditch	Eagle River	1,140	Larkspur Ditch	Tomichi Cr.	217
Wurtz Ditch	Eagle River	2,010	TOTAL ACRE FEET		49,787

BOUNDARIES OF WATER DISTRICTS - DISTRICTS NO. 1 to 70

WATER DISTRICTS - WATER COMMISSIONERS.

The state is also divided into seventy water districts - each Irrigation Division comprising a number of Water Districts.

CHAP. 147; ART. 13; SECTIONS 1 to 70: Lands watered constitute districts: The land irrigated from ditches taking water from the following described rivers or natural streams of the state of Colorado, are hereby declared to constitute irrigation districts. (Each district under the direct supervision of the Division Engineer in charge of a Water Commissioner).

DIST. NO. 1.

Water district No. 1 shall consist of all lands in the state of Colorado irrigated by waters taken from that portion of the South Platte river between the mouth of the Cache la Poudre river and the west boundary line of Washington county, and from the streams draining into the said portion of the South Platte river.

DIST. NO. 2.

District No. 2 shall consist of land irrigated from ditches taking water from the South Platte river and its tributaries, except Big Thompson, St. Vrain and Clear Creek, between the mouth of the Cache la Poudre and the mouth of Cherry creek.

DIST. NO. 3.

District No. 3 shall consist of all lands irrigated from ditches taking water from the Cache la Poudre and its tributaries.

DIST. NO. 4.

District No. 4 shall consist of all lands irrigated from ditches taking water from the Big Thompson and its tributaries.

DIST. NO. 5.

District No. 5 shall consist of all lands irrigated from ditches taking water from the St. Vrain creek and its tributaries, except the Boulder, its tributaries, and Coal Creek.

DIST. NO. 6.

District No. 6 shall consist of all lands irrigated from ditches taking water from the Boulder and its tributaries, and Coal Creek.

DIST. NO. 7.

District No. 7 shall consist of all lands irrigated from ditches taking water from Clear creek and its tributaries.

DIST. NO. 8.

Water district No. 8 shall consist of all lands irrigated by ditches taking water from Cherry creek, Plum creek and Platte river and their tributaries, except Bear creek, above water district No. 2, and below the forks of the north and south branches of the South Platte river, and including all lands and ditches in Douglas county.

DIST. NO. 9.

District No. 9 shall consist of all lands irrigated by ditches taking water from Bear creek and its tributaries.

WATER DISTRICTS - Boundaries

DIST. NO. 10.

New districts may be formed. District No. 10 shall consist of all lands irrigated from ditches taking water from the Fountain and its tributaries; provided that such district shall not extend beyond the limits of El Paso county.

Other irrigation districts may be formed from time to time by the governor on petition of parties interested.

DIST. NO. 11.

Water District No. 11 shall consist of all lands irrigated by water taken from that portion of the Arkansas river above water district No. 12, and from streams draining into the said portion of the Arkansas river.

DIST. NO. 12

District No. 12 shall consist of all lands irrigated from ditches or canals taking water from that part of the Arkansas river lying in Fremont county; also, lands irrigated from ditches or canals taking water from the tributaries, of said portion of the Arkansas river, except Texas creek and its tributaries, and that part of Grape creek which lies above the south line of said Fremont county.

DIST. NO. 13.

District No. 13 shall consist of all lands irrigated from ditches or canals taking water from Texas creek and its tributaries and that part of Grape creek and its tributaries lying in Custer county.

DIST. NO. 14.

Water district No. 14 shall consist of all lands irrigated by water taken from that portion of the Arkansas river situated within the boundaries of Pueblo county and from the streams draining into the said portion of the Arkansas river, except the St. Charles and Huerfano rivers and their tributaries, and except also that portion of the Fountain embraced in water district No. 10, and the streams draining into the said portion of the Fountain.

DIST. NO. 15. District No. 15 shall consist of all lands irrigated from ditches or canals, taking water from the St. Charles and its tributaries.

DIST. NO. 16.

District No. 16 shall consist of all lands irrigated from ditches and canals taking water from the Huerfano and its tributaries.

DIST. NO. 17.

Water district No. 17 shall consist of all lands irrigated by ditches or canals taking water from that portion of the Purgatoire river north of the north boundary line of Las Animas county, and all lands irrigated by ditches or canals taking water from that portion of the Arkansas river below water district No. 14 and above the mouth of the Purgatoire river, and from the streams running into the said portion of the Arkansas river except that portion of the Apishapa river and its tributaries south of the north line of township twenty-eight south of range sixty-one west of the sixth principal meridian.

DIST. NO. 18.

Water district No. 18 shall consist of all lands irrigated by ditches or canals taking water from that portion of the Apishapa river and its tributaries south of the north line of township twenty-eight south of range sixty-one west of the sixth principal meridian.

WATER DISTRICTS - Boundaries

DIST. NO. 19.

Water district No. 19 shall consist of all lands irrigated by ditches or canals taking water from that portion of the Purgatoire river and its tributaries, south of the north boundary line of Las Animas county.

DIST. NO. 20.

Water district No. 20 shall consist of all lands irrigated by water taken from that portion of the Rio Grande river above the mouth of the Rio Conejos and from all streams draining into the portion of the Rio Grande river, including Piedra Spring, Gato and San Francisco creeks and all other streams including those that would in time of flood flow into the said portion of the Rio Grande river, although at ordinary stages the waters thereof might not flow above the surface into the Rio Grande river, except the Alamosa river and its tributaries and the La Jara and Trinchera creeks and their tributaries.

The said water district No. 20 shall include only all the lands in Mineral county, Hinsdale county, Rio Grande county, Conejos county, Saguache county and Alamosa county, which are now watered from said Rio Grande river and its tributaries.

DIST. NO. 21.

District No. 21 shall consist of all lands irrigated from ditches or canals taking water from the Alamosa and La Jara creeks and their tributaries.

DIST. NO. 22.

District No. 22 shall consist of all lands in the state of Colorado irrigated from ditches or canals taking water from Conejos creek and its tributaries.

DIST. NO. 23.

Water district No. 23 shall consist of all lands irrigated from ditches or canals taking water from the South Platte river and from any of its direct or indirect tributaries, at any point or points above water district No. 8, in the state of Colorado; provided that all lands in the Arkansas River Basin which are located within the boundaries of Park county shall revert to and be included in water district No. 12.

DIST. NO. 24.

Water district No. 24 shall consist of all lands in the state of Colorado irrigated by water taken from that portion of the Rio Grande between the mouth of the Rio Conejos and the Colorado state line, from the streams draining into the said portion of the Rio Grande and from Costilla creek, and the streams draining into Costilla creek.

DIST. NO. 25.

Water district No. 25 shall consist of all lands irrigated by water taken from the San Luis creek and all its tributaries.

DIST. NO. 26.

District No. 26 shall consist of all lands irrigated from ditches or canals, taking water from Saguache creek and its tributaries.

DIST. NO. 27.

District No. 27 shall consist of all lands irrigated from ditches or canals, taking water from Tuttle, Carnero, La Garita, and all other creeks, and their tributaries, which have their sources of water supply in the La Garita mountains and flow eastward into the San Luis valley.

WATER DISTRICTS - Boundaries

DIST. NO. 28.

District No. 28 shall consist of all lands irrigated from ditches or canals, taking water from the Tomichi and its tributaries.

DIST. NO. 29.

District No. 29 shall consist of all lands lying in the state of Colorado irrigated from ditches or canals, taking water from that part of the San Juan river, and its tributaries, which lie above the junction of the San Juan river and the Rio Piedra, and including the Rio Piedra.

DIST. NO. 30.

District No. 30 shall consist of all lands lying in the state of Colorado irrigated from ditches or canals, taking water from that part of the Rio Las Animas river, and its tributaries, which lie in Colorado.

DIST. NO. 31.

District No. 31 shall consist of all lands in the state of Colorado irrigated from ditches or canals, taking water from that part of the Los Pinos river, and its tributaries, which lie in Colorado.

DIST. NO. 32 & 46.

Water district No. 32 shall consist of all lands in the state of Colorado, irrigated by water taken from those natural streams which drain into the San Juan river and not included in water districts Nos. 29, 30, 31, 33 and 34, and excepting lands in the state of Colorado, irrigated by water diverted from what is known as San Brito Arroya and other arroyas the waters of which drain into the San Juan river below the junction of the San Juan river and the Rio Piedra and above the junction of the San Juan river and the Los Pinos river, which drainage area is hereby incorporated in a new water district, which shall be known as water district No. 46.

DIST. NO. 33.

District No. 33 shall consist of all lands lying in the state of Colorado irrigated from ditches or canals, taking water from the La Plata river, and its tributaries.

DIST. NO. 34.

Water district No. 34 shall consist of all lands lying in the state of Colorado, irrigated from ditches or canals taking water from the Rio Mancos, and its tributaries; and also all lands irrigated from ditches or canals taking water from that part of the Dolores river within the boundaries of said Montezuma county, and from streams draining into said portion of Dolores river.

DIST. NO. 35.

Water district No. 35 shall consist of all lands lying in the county of Costilla, in this state, watered by the Trinchera creek, Sand or Medano creek, Big Spring creek, Little Spring creek, Mosca creek, North and South Zapato creeks, Sierra Blanca creek, and all streams draining into the said creeks, and all other streams between said Trinchera creek and said Sand or Medano creek.

DIST. NO. 36.

District No. 36 shall consist of all the lands irrigated from water taken from the Blue river and its tributaries.

DIST. NO. 37.

District No. 37 shall consist of all lands lying in the state of Colorado irrigated by waters taken from the Eagle river and its tributaries.

WATER DISTRICTS - Boundaries

DIST. NO. 38.

District No. 38 shall consist of all lands lying in the state of Colorado irrigated by waters taken from the Roaring Fork river and its tributaries.

DIST. NO. 39.

The boundaries of water district No. 39 are hereby defined to include all the tributaries of Grand river on the north side thereof, from the mouth of the Roaring Fork river, westerly to the state line; and shall consist of all land lying in the state of Colorado, irrigated by any and all such tributaries, excepting Roan creek, and its tributaries, and all lands irrigated thereby; and excepting also all lands lying in Mesa county. The said water district No. 39 shall include only all the lands in Garfield county, above described, and which are not irrigated from Roan creek or any of its tributaries.

DIST. NO. 40.

Water District No. 40 shall consist of all lands irrigated from ditches taking water from Crystal creek and Smith's Fork, Escalante creek, and their tributaries, all lands lying within the boundaries of Delta county irrigated from the Gunnison river and its tributaries, except lands irrigated from the Uncompahgre river and its tributaries, and all lands in the county of Delta and the county of Gunnison irrigated by ditches taking their water from the north fork of the Gunnison river and its tributaries.

DIST. NO. 41.

District No. 41 shall consist of all lands irrigated from ditches or canals taking water from the Uncompahgre river and its tributaries, except so much as are within the boundary lines of Ouray county.

DIST. NO. 42.

District No. 42 shall consist of all lands irrigated from ditches and canals taking water from the Grand and Gunnison rivers and their tributaries within the county of Mesa, except Escalante creek. The boundaries of water district No. 42 shall not be construed to include any land embraced in either water district No. 39 or water district No. 70.

DIST. NO. 43.

Water district No. 43 shall consist of lands in the counties of Rio Blanco, Garfield and Moffat irrigated by water taken from the White river and its tributaries and all streams draining into them, or either of them, including Buck creek, Black creek, Fox creek, Weary Mule creek, Skull creek, Box Elder creek, Wolf creek, Deep Channel creek, Crookedwash, Ung-a-too-roosch creek and Evacuation creek, and their tributaries and the several streams draining into them.

DIST. NO. 44.

Water district No. 44 shall consist of all lands in the counties of Rio Blanco, Routt and Moffat irrigated by water taken from that portion of the Yampa river above the south of the Little Snake and below the intersection of said Yampa river with the county lines between the counties of Routt and Moffat and from all streams draining into that portion of said Yampa river on both sides thereof including Fortification creek, Elk Head creek, Williams river or Williams Fork river and all their tributaries not specifically included in water districts Nos. 43, 55 and 57.

DIST. NO. 45.

Water district No. 45 shall consist of all lands situated on the south side of the Grand river and irrigated from ditches or canals taking water from the Grand river and its tributaries, between the mouth of Roaring Fork river and the north line of Mesa county.

WATER DISTRICTS - Boundaries

DIST. NO. 46. (See Dist. No. 32).

DIST. NO. 47.

Water district No. 47 shall consist of all lands irrigated by water taken from that portion of the North Platte river above the mouth of Michigan creek, and from the streams draining into the said portion of the North Platte river and all land irrigated by water taken from that portion of the North Platte river between the area above described and the state line of Colorado, and from the streams draining into said portion of the North Platte river and from Granite, Encampment and Big creeks and the streams draining into said creeks; and all lands irrigated by water taken from any and all rivers, creeks, streams, or springs in Jackson county, Colorado.

DIST. NO. 48.

Water district No. 48 shall consist of all lands in the state of Colorado irrigated by water taken from the Big Laramie river and from the streams draining into the said river.

DIST. NO. 49.

Water district No. 49 shall consist of all lands in the state of Colorado irrigated by water taken from the south fork of the Republican river and the Smoky Hill river and the streams draining into the said rivers.

DIST. NO. 50.

Water district No. 50 shall consist of all lands irrigated by water taken from the Muddy and Troublesome creeks, and from the streams draining into the said creeks.

DIST. NO. 51.

Water district No. 51 shall consist of all lands irrigated by water taken from the Grand river above the mouth of the Blue river and from the streams draining into the said portion of the Grand river, except the Muddy and Troublesome creeks and the streams draining into the said creeks.

DIST. NO. 52.

Water district No. 52 shall consist of all lands on the south side of the Grand river irrigated by water taken from the Grand river below the mouth of Blue river and above the mouth of Roaring Fork river, and from the streams draining into the said portion of the Grand river, except Eagle river and its tributaries.

DIST. NO. 53.

Water district No. 53 shall consist of all lands on the north side of the Grand river irrigated by water from that portion of the Grand river below the mouth of Muddy creek and above the mouth of Roaring Fork river, and from the streams draining into the said portion of the Grand river.

DIST. NO. 54.

Water district No. 54 shall consist of all lands in Moffat and Routt counties irrigated by water taken from that portion of the Little Snake river above the most westerly intersection of said river with the north boundary line of the state of Colorado, being about or near a point on said state line and the north boundary line of township twelve north range ninety-four west sixth principal meridian where the section line between sections three and four in said township meets and would intersect the said north boundary line of said state and said township, and below the most westerly part of water district No. 47, being about or near a point where the said north boundary state line is intersected by the range line between range eighty-four and eighty-five west sixth

WATER DISTRICTS - Boundaries

principal meridian, so as to extend to and include the headwaters of said Little Snake River, and including all streams draining into that portion only of the said Little Snake river, not specifically included in water district No. 55.

DIST. NO. 55.

Water district No. 55 shall consist of all lands in Moffat county irrigated by water taken from that portion of the Yampa river below water district No. 44 and to the west line of the state of Colorado, and from all streams draining into that portion of said river, and also water taken from that portion of the Little Snake river below water district No. 54, and from all streams draining into that portion of said river.

DIST. NO. 56.

Water district No. 56 shall consist of all lands in the state of Colorado irrigated by water taken from that portion of the Green river embraced within the boundaries of Moffat county.

DIST. NO. 57.

Water district No. 57 shall consist of all lands irrigated by water taken from that portion of the Yampa river above water district No. 44, as defined in section 147-13-45, and below the mouth of the Elk river, and from the streams draining into that portion of said Yampa river on both sides thereof.

DIST. NO. 58.

Water district No. 58 shall consist of all lands irrigated by water taken from the Yampa river above water district No. 57, and from the streams draining into the said portion of Yampa river.

DIST. NO. 59.

Water district No. 59 shall consist of all lands irrigated by water taken from the Gunnison river above the mouth of Tomichi creek, and from all streams draining into the said portion of Gunnison river; also of all lands on the north side of Gunnison river below the mouth of Tomichi creek and above water district No. 40, and from the streams draining into the said portion of the Gunnison river.

DIST. NO. 60.

Water district No. 60 shall consist of all lands irrigated by water taken from the San Miguel river and from the streams draining into the said river.

DIST. NO. 61.

Water district No. 61 shall consist of all lands lying in the state of Colorado irrigated by water taken from that portion of the Dolores river and its tributaries between the mouth of the San Miguel river and the north line of San Miguel county.

DIST. NO. 62.

Water district No. 62 shall consist of all lands south of the Gunnison river irrigated by water taken from the Gunnison river below the mouth of Tomichi creek and above water district No. 40, and from the streams draining into the said portion of the Gunnison River.

DIST. NO. 63.

Water district No. 63 shall consist of all lands in the state of Colorado irrigated by water taken from that portion of the Dolores river below the mouth of the San Miguel river and from the streams draining into the said portion of the Dolores river.

WATER DISTRICTS - Boundaries

DIST. NO. 64.

Water district No. 64 shall consist of all lands irrigated by water taken from that portion of the South Platte river between the westerly boundary line of Washington county and the state line of Colorado and Nebraska, and from the streams draining into the said portion of the South Platte river.

DIST. NO. 65.

Water district No. 65 shall consist of all lands in the state of Colorado irrigated by water taken from the middle and north forks of the Republican river, from Sandy and Frenchman's creeks, and the tributaries of these streams.

DIST. NO. 66.

Water district No. 66 shall consist of all lands in the state of Colorado irrigated by water taken from the Dry Cimarron and the streams draining into the said river.

DIST. NO. 67.

Water district No. 67 shall consist of all lands in the state of Colorado irrigated by water taken from that portion of the Arkansas river below the mouth of the Purgatoire river, and from the streams draining into the said portion of the Arkansas river.

DIST. NO. 68.

Water district No. 68 shall consist of all lands irrigated by water taken from that portion of the Uncompahgre river above water district No. 41, and from the streams draining into the said portion of the Uncompahgre river.

DIST. NO. 69.

Water district No. 69 shall consist of all lands lying in the state of Colorado irrigated by water taken from those portions of the Dolores river and its tributaries within Dolores and San Miguel counties.

DIST. NO. 70.

Water district No. 70 shall consist of all lands irrigated by water taken from Roan Creek and all its tributaries situated within the counties of Garfield and Mesa, in this state, and also all lands in Mesa county situated north of Grand river and east of Roan creek.

APPENDIX B

**TO: SENATOR DONALD G. BROTZMAN, CHAIRMAN
JOINT LEGISLATIVE COMMITTEE
ON WATER PROBLEMS**

FROM: THE COLORADO WATER CONSERVATION BOARD

**RE: THE COLORADO WATER CONSERVATION
BOARD, A REPORT ON ITS ORIGIN, FUNCTIONS,,
ORGANIZATION, HISTORY OF APPROPRIATIONS,
AND RELATIONS WITH FEDERAL DEPARTMENTS.**

June 1954

C O N T E N T S

Page

Letter of Transmittal

Letter from Director Harper
Legislative Council

Origin	1
Function	3
Organization Chart	5 (a)
Costs Compared with Other States	6
Budget Requests, Chart	7
Appropriations, Chart	7
Budget Requests and Appropriations, table . .	8
History of Appropriations and Staff	9
Federal Departments and Committees, Relations with	22
Reference Material	25

C O P Y

STATE OF COLORADO

Legislative Council
State Capitol - Denver 2, Colorado

Palmer L. Burch, Chairman Vernon A. Cheever, Vice Chairman
Shelby F. Harper, Director

June 10, 1954

Mr. Ivan C. Crawford, Director
Colorado Water Conservation Board
State Office Building
Denver, Colorado

Dear Mr. Crawford:

You will recall the conversations in your office on June 9th when Representative Frank Kemp, Jr. and I discussed the current effort of the General Assembly to better acquaint itself with water resources conservation and development in Colorado. A major point brought out was that additional information is needed in the legislative files (as maintained in the offices of the Legislative Council) concerning our water resources, their administration, conservation and development and the agencies of the executive branch which are responsible for these functions. At the time of this conference you provided Representative Kemp with a History of Appropriations and Staff, 1937 to date, of the Colorado Water Conservation Board. This was an excellent beginning in assisting the General Assembly to better understand the subject of water resource activity in Colorado. However, additional data would be helpful to supplement these data and augment our meager "water information" file.

Inasmuch as the subject was rather fully discussed by you and Representative Kemp on June 9th, we have set forth herein only a brief statement of legislative purpose in this regard. However, I trust that it is adequate to provide an understanding of our need, and it would be appreciated if you would provide this office with such other basic data which you, in your capacity as Director of the agency responsible for the state's water resource planning and research, determine to be fundamental to a working legislative file on water. In line with the general discussion (June 9th) in your office, I believe such data may well include, but not be limited to, background information relating to the creation and purposes of the C. W. C. B., copies of the annual (1937-52) reports of the Director, staff comparisons (personnel-wise and as to level of compensation) between Colorado's water department and similar agencies in our sister states with whom we must negotiate and compete for water development (in this regard, it would be helpful to have a functional organizational chart of the C.W.C.B.) such basic research documents and reports

Mr. Ivan C. Crawford -----page two.

which you in your wisdom would determine to be of value to maintain in our files for ready and immediate reference and preliminary study by members of the General Assembly (keeping in mind that for the more comprehensive study and analysis the files and research data available at the C.W.C.B. or the State Engineer's office would be directly consulted as the need arises), and a listing of the several federal agencies which participate in water resource development and conservation activities in the State of Colorado. Included in this latter should be a brief statement of the responsibility of each such agency insofar as Colorado water is concerned and the name and address of the officer in charge of the local activities.

If you have any questions regarding any of the points listed above, I shall be happy to discuss them further with you at your convenience.

Sincerely yours,

/s/ SHELBY F. HARPER

SFH:cks

cc: Representative Frank Kemp, Jr.
Senator Donald G. Brotzman



COLORADO WATER CONSERVATION BOARD

212 STATE OFFICE BUILDING
DENVER 2, COLORADO

Tabor 5853
KEystone 1171, Ext. 432

June 22, 1954

Mr. Shelby P. Harper, Director
Legislative Council
State Capitol Building
Denver 2, Colorado

Dear Mr. Harper:

I am enclosing with this letter eight copies of some mimeographed material which, I believe, will give the Legislative Committee the information requested in your letter of June 10, 1954. This information is segregated under the following headings:

1. Origin of the Colorado Water Conservation Board.
2. Organization and Functions.
3. Cost comparisons with surrounding states.
4. Budget Requests and appropriations.
5. History of Appropriations and Staff.
6. Contacts with Federal Departments and Committees.
7. Reference Material.

You will note that we are able to send you copies of only one of our recent reports, the Cliffs-Divide report. Our files, with the exception of this case, contain only one copy of each report. As we constantly have occasion to refer to the reports we should have them where they can be reached. As new ones come in I shall see that a copy is reserved for the Legislative Council file.

Separate from the mimeographed report, I am also sending all available yearly reports issued from this office.

Finally I am enclosing copies of a pamphlet entitled Colorado's Water Resources which gives some information which may be of value to the Committee.

Sincerely yours,

Ivan C. Crawford
Ivan C. Crawford
Director

ICC:mfd
encls.

cc: Rep. Frank Kemp, Jr.
Senator Donald G. Brotzman
Members, Colo. Water Conservation Board

Origin Colorado Water Conservation Board

The genesis of the Colorado Water Conservation Board is to be found in the water resources committee of the State Planning Commission. It soon became evident to this committee, even in the early days of the great depression, that the water resources of Colorado constituted a field so broad and important that it should be placed in a subdivision of the State government where it would receive the undivided attention of a group of qualified Board members and state employees.

For several years the projected organization was considered and finally legislation drawn up to make the idea effective. In Governor Teller Ammons' message to the 31st General Assembly of the State of Colorado there is found the following discussion of this proposed organization:

Water Conservation and Utilization

"We all realize that water is the limiting factor in the future development of our agricultural, mining and other industries and general growth. Three-fourths of our agricultural crops are produced on irrigated land. One million dollars worth of water is capable of producing many millions of dollars of gross income when properly used with other factors of production such as land, labor and capital.

Colorado has lost millions of dollars of income because of the lack of adequate storage and distribution of water. Recent economic and engineering studies have shown us that by proper storage control of our water resources the state will add millions to our land values.

We hope that this will be the beginning of a new era in the development and conservation of our greatest natural resource--water--.. Immediate action is necessary to effect the most beneficial use of this valuable asset.

The State Engineer's office, the State Planning Commission, the Colorado Agricultural Experiment Station and the Federal Reclamation Bureau and public spirited citizens have made excellent progress in this direction, but it is not enough, we need continuous investigation of promising irrigation and water projects.

In order to protect and develop the natural resources of the state, and in order to co-ordinate the activities of the various departments dealing with water resources, I recommend that you enact a law creating a Colorado Water Conservation Board giving it ample power to defend the state's title to the water which arises within the state. The commission should be given other broad powers which will enable it to fully co-operate with the national government and other agencies.

Due to our priority system of appropriations, it is urgent that we encourage and assist our citizens to make beneficial use of our waters as rapidly as possible and then see to it that their water rights are protected by the state government.

The past few years the tremendous value of our water has become more apparent because of the severe drouths suffered by the semi-arid states, and as a consequence, every other state surrounding Colorado has been and is now taking advantage of every possibility to develop and conserve it's water supply and much of it is being done to the detriment of Colorado. Colorado must proceed with survey work immediately and encourage private capital to develop and finance feasible projects. Better co-operation should be encouraged in order to secure federal aid on projects approved by the Reclamation Service and Army. Full co-operation should be given to our representatives in Washington in order to secure Federal aid and to seek an equitable apportionment of federal funds for water projects, particularly where Colorado is not protected by compacts.

In order to protect our present wealth and in order to further increase the income and prosperity of the state, I sincerely ask that you give careful consideration to this constructive program of water development.

The Board should be in a position to move rapidly. Many matters now pending should be attended to immediately. Colorado has already lost millions of dollars by delay and in not providing adequate funds and proper organization for handling the situation."

Organization and Functions
of
Colorado Water Conservation Board

Section 11 of the Act creating the Water Board gives, in some detail, the duties of the Board in order that it may "promote the conservation of the waters of the State of Colorado in order to secure the greatest utilization of such water and the utmost prevention of floods."

Section 11 is reproduced on pages 4, 5 and 6.

The Board has adhered closely to the duties as outlined; however, some of those duties require much more time than others and entail greater effort.

(a) The Board has fostered and encouraged to the limit of its power the formation of irrigation organizations and continues to do so.

(b) I know of no instances where the Board has assisted irrigation agencies in their financing.

(c) Since its beginning, the Board has been busy devising and formulating methods, means and plans for bringing about the greater utilization of the waters of the state. Every effort has been employed to this end.

(d) Until recently the Board has not had any funds with which to make investigations and surveys other than funds paid as salaries to regular employees. The 1953 State Assembly appropriated funds for a survey of the surface water resources of the Western Slope. This survey was made by a nationally known firm of engineers, agreed upon by the east and west slope interests. Through cooperative financing with the U. S. Geological Survey data governing surface water run-off and underground supplies is being continuously gathered.

The Board, through its engineering organization and with consulting engineer R. J. Tipton, is presently studying the problem of overdrafts on the Rio Grande River whereby it is claimed the state of Texas, has lost 160,000, or perhaps more, acre-feet of water in the last two years.

(e) The Board cooperates and has cooperated since its beginning with agencies of the United States Government and with surrounding states on water matters. (See p. 22).

(f) The Board, with the exception of contracts with the U. S. Geological Survey, has not in recent years shared in the expense of making preliminary surveys in cooperation

with the U. S. Government. As a rule there has been sufficient federal money available to the Bureau of Reclamation and the U. S. Army Engineers to pay the cost of reports.

However, in connection with the proposed large Curecanti Reservoir, the Board did send a party of engineers into the field to secure data.

(g) The Boards' attorney has been active in the formulating and preparing drafts of legislature, both state and Federal, but especially Federal in connection with the National Reclamation Association.

(h) A very large proportion of the time of the staff has been devoted to the investigation of "plans, purposes and activities of other state, and of the Federal Government which might effect the interstate waters of Colorado." In fact it can be said truthfully that the Board is continuously engaged in such work.

(i) The consulting engineer, the attorney and the director have made many, many appearances in the past before boards, bureaus, committees, and commissions of the Federal Government and other states for the purpose of "protecting and asserting the authority, interest and rights of the state of Colorado and its citizens", over in and to the waters of the interstate streams in this state. Under the leadership of Judge Stone and with the assistance of Messrs Breitenstein and Tipton, Colorado has been especially noted in this regard.

EXTRACT FROM ACT CREATING
WATER CONSERVATION BOARD

* * * *

"Section 11. It shall be the duty of the Board to promote the conservation of the waters of the State of Colorado in order to secure the greatest utilization of such waters and the utmost prevention of floods; and in particular, and without limiting the general character of this section, the Board shall have power and it shall be its duty:

(a) To foster and encourage irrigation districts, public irrigation districts, water users' associations, conservancy districts, drainage districts, mutual reservoir companies, mutual irrigation companies, grazing districts, and any other agencies which have been or may hereafter be formed under the laws of the State of Colorado, or of the United States, for the conservation, development and utilization of the waters of Colorado;

(b) To assist any such agencies in their financing, but not to lend or pledge the credit or faith of the State of Colorado in aid thereof, or to attempt to make the state responsible for any of the debts, contracts, obligations, or liabilities thereof;

(c) To devise and formulate methods, means and plans for bringing about the greater utilization of the waters of the state and the prevention of flood damages therefrom;

(d) To gather data and information looking toward the greater utilization of the waters of the state and the prevention of floods and for this purpose to make investigations and surveys;

(e) To cooperate with the United States and the agencies thereof, and with other states for the purpose of bringing about the greater utilization of the waters of the State of Colorado and the prevention of flood damages;

(f) To cooperate with the United States, or any of the agencies thereof, in the making of preliminary surveys, and sharing the expense thereof, when necessary, respecting the engineering and economic feasibility of any proposed water conservation or flood control project within the State of Colorado, designed for the purpose of bringing about greater utilization of the waters of this state.

(g) To formulate and prepare drafts of legislation, state and federal, designed to assist in securing greater beneficial use and utilization of the waters of the state and protection from flood damages;

(h) To investigate the plans, purposes and activities of other states, and of the Federal Government, which might affect the interstate waters of Colorado;

(i) To confer with and appear before the officers, representatives, boards, bureaus, committees, commissions, or other agencies of other states, or of the Federal Government, for the purpose of protecting and asserting the authority, interests and rights of the State of Colorado and its citizens over, in and to the waters of the interstate streams in this state;

Colorado Water Conservation Board

ORGANIZATION CHART
State Legislature

Governor
Chairman of Board

Water Conservation Board
14 members including Governor

Director
Executive Officer

..... Attorney
:
Consulting
Engineer

Adm. Secy. I
2 Clerk-Steno.-II

1 Engr. P-II
(Part-time)

1 Clerk-Typist II
Licensing of Well
Drillers

Chief Engineer P-VI

3 Engineers P-II 1 Engr. P-III
(one part-time)

(j) In general, to take such action and have such powers as may be incidental to the foregoing specific provisions and to the general purposes of this Act; provided, however, that nothing in this Act contained shall be construed as restricting or limiting the administrative functions or authority of the State Engineer, including the gathering of data respecting the water supplies of this state, or restricting or limiting the statutory powers of the State Planning Commission, and"

PER CAPITA COST OF WATER RESOURCE DEPARTMENTS

Correspondence with water resource departments of other states shows that in a per capita basis Colorado is considerably behind those in the intermountain area, and very much behind California.

In making this comparison normal budgets have been compared. The Colorado appropriation for the Western Slope study in 1953 has been omitted for this reason.

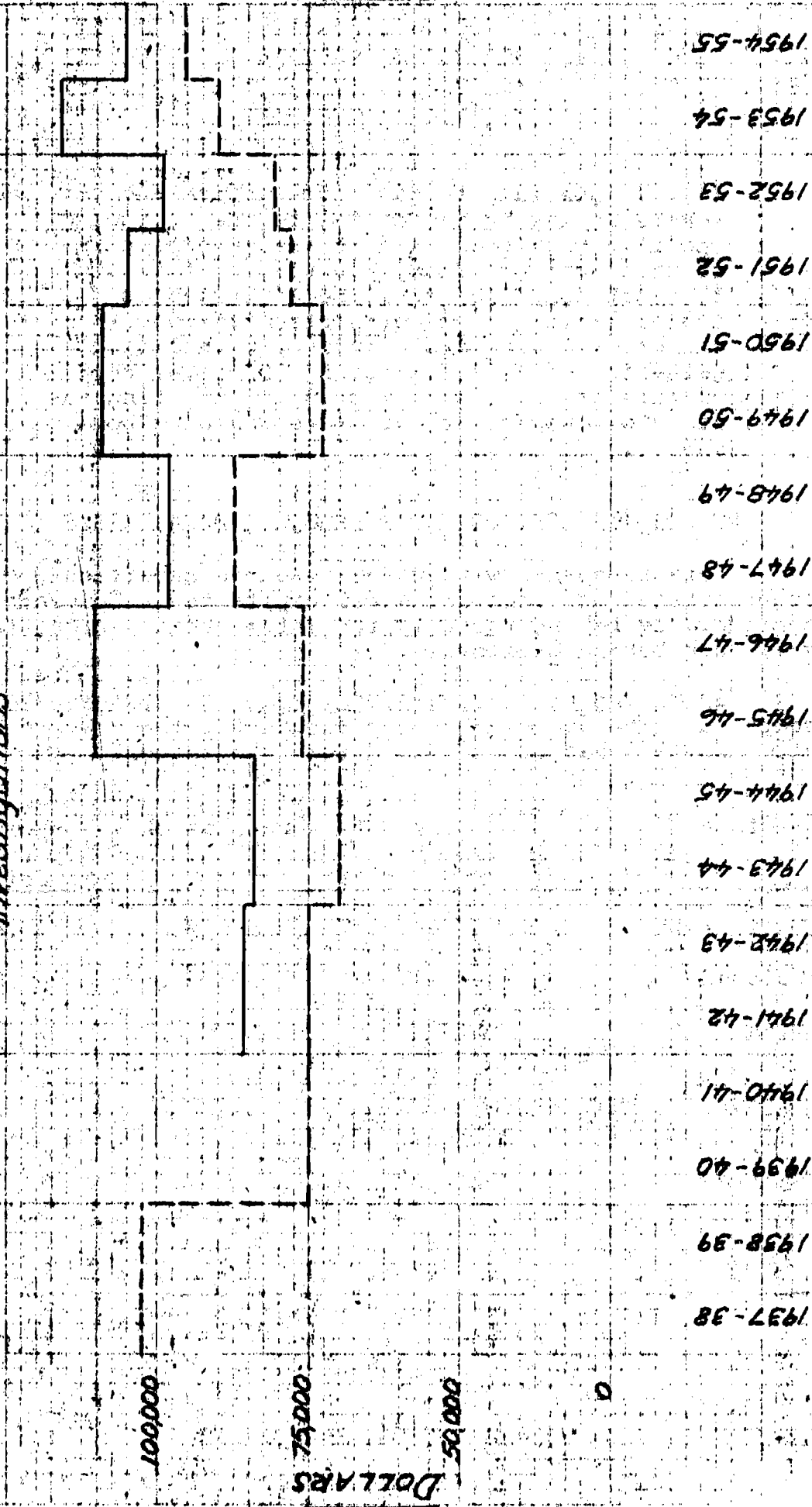
State		Yearly Budget 1953	Population	Appropriated per capita Dollars
California		4,279,997	10,586,223	.404
Colorado		97,500	1,325,089	.073
Utah		65,000	688,862	.094
	1954 -	50,000		.073
Arizona	1955 -	164,529	749,587	.22
	1953 -	83,155		.11
Wyoming		42,500	290,529	.143

STATE OF COLORADO WATER CONSERVATION BOARD - ENGINEERING DEPARTMENT PLOTTED CHECKED

COLORADO WATER CONSERVATION BOARD

BUDGET REQUESTS AND APPROPRIATIONS

Exclusive of Compact Administration and Underground Water Investigations



FISCAL YEARS

COLORADO WATER CONSERVATION BOARD

BUDGET REQUESTS AND APPROPRIATIONS.

Exclusive of Compact Administration and Underground Water Investigations

	Requests					Appropriations				
	Personal Services	Maintenance & Operation	Capital Outlay	States Share Retirement	Total	Personal Services	Maintenance & Operation	Capital Outlay	States Share Retirement	Total
1937-1939										205,000.00
1939-1941						104,000.00	45,400.00	600.00		150,000.00
1941-1943	120,180.00	50,840.00	2,000.00		173,020.00	114,620.00	34,380.00	1,000.00		150,000.00
1943-1945					168,000.00					140,000.00
1945-1947	145,160.00	75,600.00	600.00		221,360.00	103,175.20	50,000.00	600.00		153,775.20
1947-1949 original request	153,280.00	69,200.00	1,000.00		223,480.00	128,177.50	43,122.50	1,000.00	2,700.00	175,000.00
Revised at request of app. comm.	126,640.00	69,200.00	1,000.00		196,840.00					
1949-1951	134,467.50	78,900.00	1,000.00	4,100.00	218,467.50	107,817.50	35,063.11	100.00	3,019.39	146,000.00
1951-1952	64,055.00	38,455.00	500.00	2,000.25	105,010.25	53,115.00	17,500.00	250.00	2,571.75	78,436.75
1952-1953	65,095.00	30,455.00	500.00	2,052.25	98,102.25	57,460.00	20,000.00	500.00	2,564.00	80,524.00
1953-1954	71,802.50	39,105.00	1,625.00	3,281.18	115,813.68	65,350.00	21,500.00	200.00	2,950.00	90,000.00
1954-1955	68,896.00	32,622.25	775.00	3,135.80	105,429.05	68,896.00	22,600.00	775.00	3,135.80	95,406.80

HISTORY

of

Appropriations and Staff
1937 to date

Colorado Water Conservation Board

The Colorado Water Conservation Board was created in 1937. Prior to that time interstate water matters and project promotional efforts had been carried on through funds appropriated to the State Engineer's office. The Board was created under the theory that such matters should be divorced from the administration of water rights, which is the principal function of the State Engineer. An immediate cause was the imminent necessity for engineering data with respect to the suit brought in the United States Supreme Court by Nebraska against Wyoming and Colorado over the waters of the North Platte River. There was also need for such data in connection with the current Colorado vs. Kansas case on the Arkansas River.

Appropriations and Staff 1937-39.

The appropriation for the beinnium July 1, 1937 to June 30, 1939 was \$205,000.00. This furnished the basis for the purchase of office and field equipment, and salaries of a full-time office staff of 10 engineers and 2 to 3 stenographers. In addition, 17 men were employed on a temporary basis in Jackson County on the field investigation for the North Platte case. Part of the appropriation was also used to pay a portion of the salaries of between 9 and 12 men working on a basic water data program under the direction of the Planning Commission.

In the second year of the biennium, the full-time staff of engineers was increased to a maximum of 14 men, while the number of temporary employees was reduced to 4 in Jackson County, and from 1 to 3 temporary helpers were used on an investigation of consumptive use of water in the Uncompahgre River valley. The basic water data program was continued.

Appropriations and Staff, 1939-41.

For the biennium 1939-1941, the appropriation to the Water Board was reduced to \$150,000.00. Since major expenditures for furniture, supplies and equipment had been previously made, this appropriation was still adequate for an increase in the full-time staff to 17 engineers and 4 stenographers during the first year of the biennium. This increase was required by the large amount of office work necessary for the summarization of field data for presentation in the North Platte Case, as well as for the Arkansas suit. Temporary employees totalled 6 to 9 men for investigations in Jackson County and on the Uncompahgre.

An additional office program of mapping irrigated lands throughout the State was initiated. The basic data program of the Planning Commission was completed during this year. The full-time staff was the largest employed by the Board between its creation and the present time.

The number of engineers dropped to between 12 and 15 during the second year of the biennium. It was sufficient, however, for carrying on the work in connection with the Supreme Court cases, and in addition, a program was commenced of checking locations

and status of water rights in various water districts, with first priority given those in which early project development was expected. Data were also worked up relative to a compact on Costilla Creek. This year was also the last to date in which there was any material expenditure for temporary help.

Appropriations and Staff, 1941-43.

The appropriation to the Board continued at the rate of \$75,000.00 per annum during the following two year period. The engineering staff averaged 12 in number the first year and 10 for the second year of the biennium, due partly to military service leaves and resignations to accept positions offering higher salary opportunities.

The staff cooperated in obtaining ground water data for a report on the South Platte River Valley, and continued preparation of data for legal presentations. The programs for mapping of irrigated lands, the checking of water rights and the collection of hydrologic data were curtailed as a result of the staff reduction.

Since the Board had been designated as the agency to make official comments on proposed projects of Federal agencies, the increase in activities of these agencies was placing heavier requirements on the staff for review and analysis of such project reports.

Collection of information for a comprehensive report on the water resources of the Arkansas River Basin was begun. Field and office work were necessary with respect to alleged violation of the decree of the United States Supreme Court on the Laramie River. Demands for consulting legal services were also heavier during this biennium as briefs were being prepared in the North Platte and Arkansas cases.

Appropriations and Staff, 1943-45.

For the 1943-1945 biennium, the Water Board's appropriation was reduced \$10,000.00 for the period. The engineering staff fell to 8 in number by the end of the biennium, due to resignations for higher salary offers. It was not possible to make replacements with experienced men at the State salary scale at this time, although compensation of the staff had increased somewhat above the pre-war level.

A decree of the U. S. Supreme Court allocated the waters of the North Platte River in June 1945. This decree ordered a complete and accurate record each year of the amount of land irrigated, and of water stored in reservoirs in Jackson County, Colorado, which became an additional duty of the engineering staff.

Appropriations and Staff, 1945-47.

The appropriation to the Board was increased to \$153,175.00 for the 1945-47 biennium, in anticipation of requirements for compact negotiation on the Arkansas River. The engineering staff reached a maximum of 10 with 3 returns from military service. However, the number of engineers dropped to 5 in the second year, following further resignations for better salaried positions.

Surveys of reservoirs in Jackson County were made, and the annual check of irrigated acreage commenced in compliance with the decree on the North Platte River.

An engineering committee to advise Arkansas River Compact Commissioners was participated in by the staff.

Official State comments were prepared on a comprehensive report on the Colorado River by the Bureau of Reclamation. As a result of the report, a Compact Commission for the Colorado River was set up. The Board Staff also did considerable work for an engineering advisory committee in this basin similar to the one for the Arkansas River. Considerable amounts were expended in compensation of compact commissioners for the latter stream, in addition to normal consulting fees.

Funds available for expenditures other than personnel were greater in this biennium than for any of the years except the first two of organization of the department.

Appropriations and Staff, 1947-49

The appropriation for the next two fiscal years, 1947-1949, for regular purposes of the department, was increased to \$175,000.00. This increase was principally

- to cover the services of compact commissioners, the two years having the highest expenditures for personal services, in addition to the regular staff, of any previous biennium. Funds available for other operating expenses were comparable with those of the preceding biennium. The Arkansas and Colorado compacts were consummated during this two-year period.

Appropriations and Staff, 1949-51; Project Report Reviews.

The appropriation was cut to \$146,000.00 for the

1949-1951 biennium. By this time the engineering staff consisted of 5 men, at which number it has remained to date.

As previously stated, review of all reports on proposed Federal projects is required of the department. These reports are the result of years of effort on the part of the Federal agencies. When the reports are received in the Board office, comments are requested within a 90-day period.

to the operation of the project. The information of the project is to be used in the construction of the project. The information of the project is to be used in the construction of the project.

the construction of the project. The information of the project is to be used in the construction of the project.

With a small staff, a detailed review and check is practically impossible in that time. The importance of such reviews is emphasized by the results which have been accomplished on two projects, through State criticism and suggestions. The proposed design of the Platoro Dam was modified to secure a saving of several million dollars to the water users. A similar result is in the process of being realized with respect to the proposed Wagon Wheel Gap Dam. Thorough studies of these projects were possible only through the assistance of the consulting engineer and his staff, and assistance to such an extent is not practicable in the case of many of the projects.

Budget requests for appropriations to enable the employment of two additional engineers have been disapproved on several occasions.

Appropriations and Staff, 1951 to Date.

In the years since July 1, 1951, in addition to the work required by such reviews, the staff of the Board has participated actively in hydrologic studies for the Arkansas-White-Red Basins Interagency Committee. Studies were also necessary with regard to the modification of the North Platte decree, and for negotiation on a modification of the Laramie River decree. Work has also been required on engineering studies relative to the operation of John Martin Reservoir under the Arkansas River Compact; and for the information of the Policy and Review Committee set up for the consideration of storage on the Gunnison River in connection with the Upper Colorado River Storage Project.

The 1953 session of the Legislature placed the licensing of water-well drillers and underground water development in the hands of the Board. This duty has required about one-half time of a staff member. The law made no provision for paying technical help. Income from fees is only sufficient to employ a clerk.

Appropriations for the past three fiscal years have been progressively increased only in the amounts necessary to meet automatic salary increases necessary to maintain this minimum staff.

Funds for expenditures other than personal services have remained for a number of years at practically the same level as for 1939-1940, in spite of the greatly increased costs of travel, supplies and services.

If the staff is to adequately perform the functions for which the Board is responsible, it is imperative that additions to the engineering staff be made possible.

The attached tabulation shows details of expenditures for personal services from July 1, 1937 to date.

R. M. Gildersleeve
Chief Engineer

Ivan C. Crawford
Director

COLORADO WATER CONSERVATION BOARD
Personal Services Expenditures

	<u>Expended for Personal Services</u>	<u>Total Ap- propriation (a)</u>
<u>1937-38:</u>		
Director, 9 to 11 Engineers	\$ 26,322.79	
Temporary and seasonal - 17 men on North Park & Uncompahgre Investigations	4,573.34	
Part time salaries for 9 to 12 men on statistical work under Planning Com- mission direction.	8,645.87	
2 to 3 Stenographers	3,259.24	
Consulting Engineers' fees (2)	4,930.30	
Consulting Attorney's fees (3)	3,169.57	
	\$ 50,901.11	\$ 102,500.00
<u>1938-39:</u>		
Director, 13 to 14 Engineers	33,926.26	
Temporary and seasonal - 1 to 4 men on Uncompahgre investigation, 1 to 3 men on North Park investigation	5,051.26	
Part-time salaries - 12 to 16 men on statistical work under Planning Com- mission direction	10,936.19	
3 to 4 Stenographers	4,387.31	
Consulting Engineers' fees (2)	5,539.86	
Consulting Attorney's fees (1)	3,000.00	
	62,840.88	102,500.00
<u>1939-40:</u>		
Director, 14 to 17 Engineers, 1 observer (evaporation station)	37,553.11	
Temporary and seasonal - 1 man on Uncompahgre investigation, 2 men on North Park investigation, 3 to 6 men on mapping of irrigated lands.	2,601.66	
1/3 salary - Sec'y. Rio Grande Com- pact Commission	433.32	
Part-time salaries for 6 months - 4 to 14 men on statistical work under Planning Commission direction	3,095.38	
4 Stenographers	4,967.26	
Consulting engineering fees (1)	3,100.00	
Consulting attorneys' fees (2)	3,500.00	
	55,250.73	75,000.00

(a) For all purposes except administration of Arkansas and Upper Colorado
Compacts, and cooperative ground water investigations.

<u>Expended for Personal Services</u>	<u>Total Ap- propriation (a)</u>
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1940-41:

Director, 12 to 15 Engineers, 2 ob- servers and gage readers	35,205.47	
Temporary and seasonal - 1 to 3 men checking Laramie River diversions -under State Engineer's direction	1,380.00	
1/3 salary - Sec'y. Rio Grande Com- pact Commission	933.30	
3 to 4 Stenographers	4,821.78	
Consulting Engineer's fees (1)	3,565.00	
Consulting Attorneys' fees (4)	6,185.00	
	<u>52,090.55</u>	\$ 75,000.00

1941-42:

Director, 11 to 13 engineers, 2 observers and gage readers	35,650.41	
4 Stenographers	5,550.64	
Consulting Engineers' fees (2)	3,415.27	
Consulting Attorneys' fees (4)	9,037.50	
	<u>53,653.82</u>	75,000.00

1942-43:

Director, 9 to 11 engineers, 1 observer	31,276.01	
3 to 4 Stenographers	5,409.73	
Consulting Engineers' fees (3)	3,705.00	
Consulting Attorneys' fees (4)	10,114.30	
Temporary helpers - 2 for 2 months	270.40	
	<u>50,775.44</u>	75,000.00

1943-44:

Director, 10 engineers, 1 observer	34,280.04	
3 Stenographers	5,340.00	
Consulting engineers fees (1)	1,005.00	
Consulting Attorneys' fees (5)	7,716.53	
	<u>48,341.57</u>	70,000.00

1944-45:

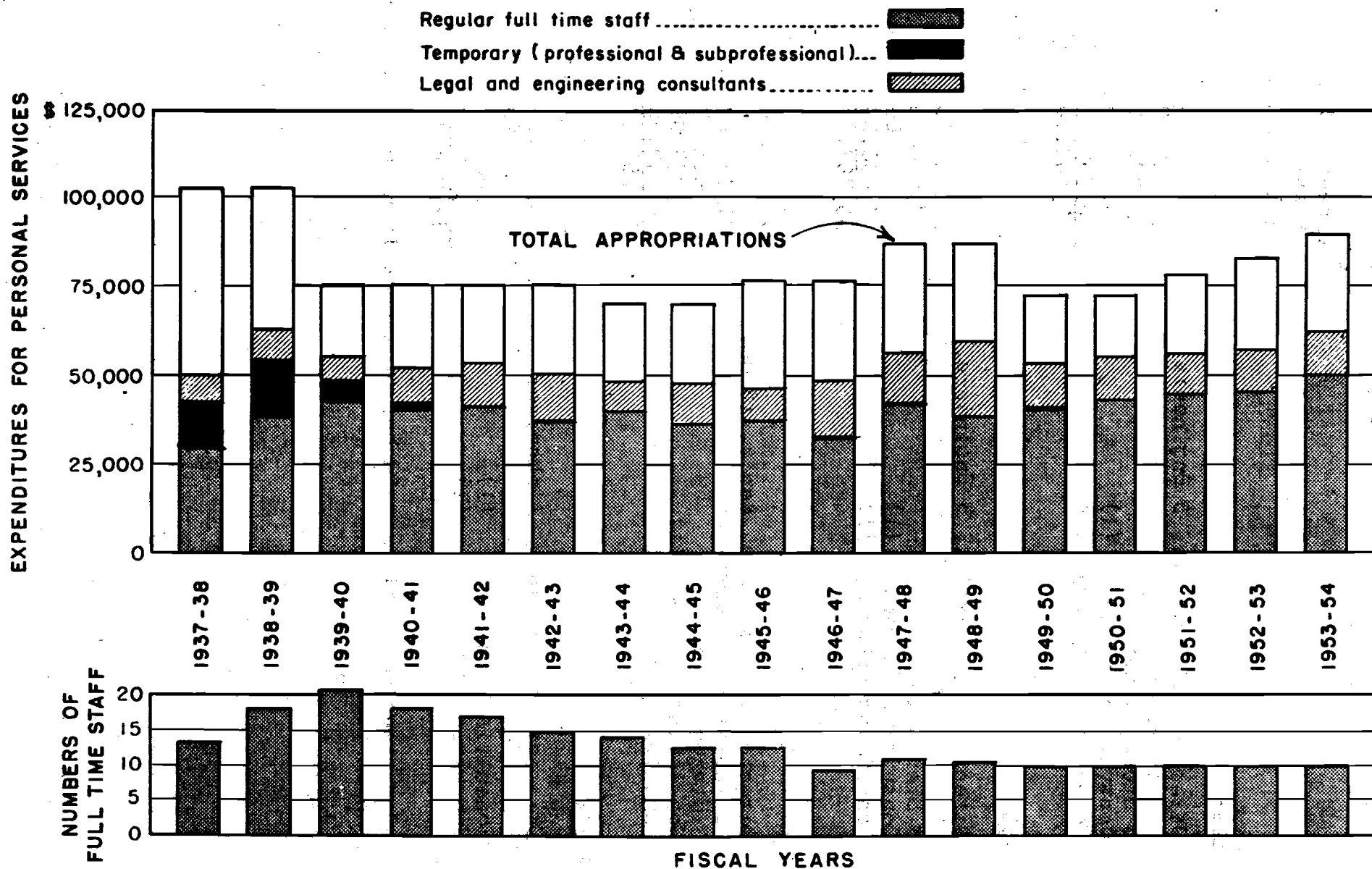
Director, 8 to 9 Engineers, 1 observer	30,792.46	
3 Stenographers	5,340.00	
Consulting Engineers' fees (2)	3,913.73	
Consulting Attorneys' fees (7)	8,136.79	
	<u>48,182.98</u>	70,000.00

	<u>Expended for personal Services</u>	<u>Total Ap- propriation (a)</u>
<u>1945-46:</u>		
Director, 8 to 10 Engineers, 1 observer	\$ 31,756.27	
2 to 3 Stenographers	5,581.10	
Consulting Engineer's fees (1)	2,062.50	
Consulting Attorneys & Compact Com- missioners (6)	7,000.40	
	<u>46,400.27</u>	\$76,587.60
<u>1946-47:</u>		
Director, 5 to 8 Engineers, 1 observer	28,059.39	
Temporary helpers - 3 man months	322.50	
2 Stenographers	4,120.91	
Consulting Engineer's fees (1)	5,280.00	
Consulting Attorneys' & Compact Com- missioners (4)	10,800.00	
	<u>48,582.80</u>	76,587.60
<u>1947-48:</u>		
Director, Adm. Ass't., 5 to 8 engineers, 1 observer	35,756.87	
2 to 3 Stenographers	5,768.02	
Consulting Engineers Fees	4,200.00	
Consulting attorneys & Compact Commissioners (4)	10,386.66	
Temporary helpers - 3 man months	362.50	
	<u>56,474.05</u>	87,500.00
<u>1948-49:</u>		
Director, Adm. Ass't., 5 to 6 engineers, 1 observer	31,912.23	
3 Stenographers	6,882.42	
Consulting Engineers fees (3)	6,900.00	
Consulting Attorneys' fees (5)	14,015.87	
	<u>59,710.52</u>	87,500.00
<u>1949-50:</u>		
Director, Adm. Ass't., 5 engineers, 1 observer	32,528.78	
Librarian - Organizing library - 7 months	1,250.00	
3 Stenographers	7,820.83	
Consulting Engineer (1)	6,000.00	
Consulting Attorney (1)	6,000.00	
	<u>53,599.61</u>	73,000.00

	<u>Expended for Personal Services</u>	<u>Total Ap- propriation (a)</u>
<u>1950-51:</u>		
Director, Adm. Ass't., 5 Engineers,		
1 observer	35,122.50	
3 Stenographers	8,229.76	
Consulting Engineer (1)	6,000.00	
Consulting Attorney (1)	6,000.00	
	<u>55,352.26</u>	\$ 73,000.00
<u>1951-52:</u>		
Director, Adm. Ass't., 5 Engineers,		
1 observer	37,322.00	
3 Stenographers	7,466.84	
Consulting Engineer (1)	6,000.00	
Consulting Attorney (1)	6,000.00	
	<u>56,788.84</u>	78,436.75
<u>1952-53:</u>		
Director (9 mo.) Adm. Ass't. (8 mo.)		
5 Engineers, 1 observer	37,443.63	
3 Stenographers	7,811.47	
Consulting Engineer (1)	6,000.00	
Consulting Attorney (1)	6,000.00	
	<u>57,255.10</u>	83,274.00
<u>1953-54:</u>		
Director, 5 Engineers, 1 observer	38,612.00	
*4 Stenographers	11,746.90	
Consulting Engineer (1)	6,000.00	
Consulting Attorney (1)	6,000.00	
	<u>62,358.90</u>	90,000.00

*Includes one clerk; salary paid out of income from Well Drillers' license fees.

COLORADO WATER CONSERVATION BOARD PERSONAL SERVICES EXPENDITURES



CONTACTS WITH FEDERAL DEPARTMENTS AND COMMITTEES

For the efficient conduct of business, it is necessary for the Director, Consulting Attorney and Consulting Engineer of the Colorado Water Conservation Board to meet with individuals and committees mentioned below. There is, of course, a continual interchange of ideas by letter and telephone.

A. Bureau of Reclamation.

Irrigation Projects; Multipurpose projects such as Upper Colorado River Storage Project, etc.

- a. Commissioner W. A. Dexheimer, Washington, D. C.
Infrequently, probably twice a year.
- b. N. B. Bennett, head planning division, Washington.
Two or three times a year.
- c. O. E. Larson, director Region 4, Salt Lake City.
Six or eight times a year. Telephone and letters - frequently.
- d. R. J. Walter, director Region 7, Denver, Colorado.
Six or eight times a year.
- e. H. E. Robbins, director Region 5, Amarillo, Texas.
Two or three times a year.
- f. J. R. Riter, Chief Planning Engineer, Denver, Colorado.
Twelve or fourteen times a year, Telephone conservation two or three times a week.

B. Corps of Engineers, U. S. Army.

Flood control; navigation; multipurpose projects.

- a. District office at Albuquerque.
Two or three times a year.
- b. District office at Los Angeles.
Three or four letters per year.
- c. Omaha District Office.
Two or three times a year.
- d. Area office, Denver Federal Center, Denver, Colorado.
(Officers change frequently, therefore names not given.)

C. U. S. Geological Survey Office in Denver. (Denver Federal Center).

Colorado matches funds with U. S. Geological Survey in the measurement of surface water run-off and underground water studies.

a. Francis Bell, district engineer, surface water.
Six or eight times a year.
Almost weekly contacts between Water Board office and him.

b. Thad McLaughlin, district geologist, groundwater.
Probably 15 or 20 contacts per year.

D. Soil Conservation Service, Department of Agriculture.
Kenneth Chalmers, Denver, Colorado
Three or four times a year.

E. Congressional Committees, Washington, D.C.

a. House subcommittee on Interior and Insular Affairs.
Appear before committee when it considers water problems affecting Colorado and inter-mountain states. It is necessary to attend hearings regardless of whether or not the director makes a statement in order that he may keep informed.

Attendance at this hearing will usually take at least a week to ten days per year.

b. Appearance before subcommittee on appropriations for Interior and Insular Affairs to support Interior Department requests for investigational funds.

It is important that investigational funds be appropriated in sufficient amount to make studies of western potential irrigation projects.

Attendance before this committee will usually consume four days annually.

c. Senate Subcommittee on Interior and Insular Affairs.
Attendance to hear testimony and on occasion to make a statement. If the project is important to Colorado it may be necessary to remain in Washington throughout the hearings and assist the Senators in planning the presentation of statements.

Time consumed - a week to ten days annually.

d. Senate Subcommittee on Appropriations for the Interior Department. It is necessary to appear before this Committee when the House of Representatives has cut appropriations so as to materially affect state and western interests.

Time required: four to six days annually.

F. Colorado Members of Congress.

The Office of the Water Conservation is almost continuously in contact with offices of our Colorado Senators. Frequently they ask for assistance in analyzing bills having to do with water development policies. Also, they frequently request interpretation of Water Board actions.

There is also occasionally correspondence with Colorado members of the House of Representatives.

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The attorney for the Board and the consulting engineer are frequently called upon to make statements before Congressional Committees.

G. Basin Inter-Agency Committees.

- a. Arkansas-White-Red River Basins Inter-Agency Committee. This is a committee composed of federal representatives from the Department of Agriculture, Department of the Army, Department of Commerce, Department of Health, Education and Welfare, Department of the Interior, the Federal Power Commission and representatives of the Governors of the states located in these basins.

The Committee meets monthly and during the past two years has produced "A Plan for the Development, Use, and Conservation of the Resources of the Arkansas Basin in Colorado."

The chief engineer of the Water Board has spent a large portion of his time in assisting in the preparation of this report. The office of the Board has been charged with the duty of coordination of the several agencies within the state of Colorado. It is expected that the final plan will be issued within the coming fiscal year.

- b. Missouri Basin Inter-Agency Committee is also made up of the representatives of Federal Departments as noted above and the Governors of states or their representatives. Meetings are held once a month.

LIBRARY MATERIALS

As a part of its working equipment the Board has brought together in its library several hundred volumes bearing on water resource problems, Supreme Court cases, Corps of Engineer, U. S. Army yearly report, Natural Resources Planning reports and a rather complete file of the U. S. Geological Survey surface water publications. In addition, it possesses extensive files containing reports on projects within the State and surrounding states. In these files there is also to be found, in many cases the raw data on which the reports are based.

Partial List of Reports Available

Cliffs-Divide	Pine River Extension
Gunnison River	Florida
San Miguel	Smith Fork
Dolores	Silt
Fruitgrowers Dam Extension	Paonia
Blue South Platte	Fryingpan-Arkansas
Collbran Project	Colorado Big-Thompson
Colorado River Storage Project	Pine River
and Participating Projects	Mancos
Fruitgrowers Dam	

San Luis Valley, Conejos Division

John Martin Dam
Cherry Creek Dam

For obvious reasons, where there is only one copy of a report available in the files it is not permissible to take the report out of the Board's office.

In several cases the discussions which accompanied the formation of water compacts are available.

Copies of the compacts in which Colorado has an interest will be found in "Interstate Compacts", a copy of which accompanies this report. Also, a copy of the Cliffs-Divide Report and a copy of Senate Document No. 106, 82nd Congress, 2nd Session entitled Fryingpan-Arkansas Project, accompanies this report.

APPENDIX C

COLORADO NEEDS

GROUND-WATER LEGISLATION

A Paper By

W. E. Code, Associate Irrigation Engineer

Colorado Agricultural Experiment Station

Colorado A and M College

Colorado Agricultural Experiment Station

General Series Paper No. 560

COLORADO NEEDS GROUND-WATER LEGISLATION 1/

In spite of its rather trite usage, the term lifeblood as related to water, needs to be brought to the public attention continually. The chaos that follows the failure of a town's water supply has been forcibly drawn to our attention during this recent drought and other droughts not so long ago. Cities of large size of course can reach out a hundred miles for water and feel fortunate in acquiring a supply at even that distance. This is not always possible for individuals and small communities. Small towns dependent on ground-water supplies are very numerous throughout the West and this is equally true in the humid East. The continued availability of good quality ground water is a matter of great importance to the economy of such communities. Its flexibility with regard to increasing rate of use is a limit on population, industry and beautification.

The greatest use of ground water is in irrigation. California was the first state to make extensive use of ground water for this purpose followed by Arizona and New Mexico. Colorado's history of ground-water development starts about 1888, but was of no importance until about 1915. It has had a phenomenal growth since the drought of the 1930's. In Texas, according to the 1950 U. S. Census, the area irrigated from wells increased 1,680,000 acres between 1940 and 1950, placing it second in rank in irrigated area. California ranks first and Colorado, formerly second, now occupies third place in total irrigated area. Irrigation in the humid areas of the East is gaining in favor and it can be expected that ground water will be an important source for this purpose.

The increasing use of ground water throughout the West is phenomenal, in fact alarming. Texas has been mentioned as outstanding, other states, Nebraska and Arizona for instance, have shown remarkable gains in the last 10 years. According to the 1950 Census, Colorado had 654 pumped irrigation wells in 1930, 2,878 in 1940 and 4,988 in 1950. Of these in 1950, 827 were in the San Luis Valley, 739 in the Arkansas Valley and 3,335 in the South Platte Valley. The remaining few are in the high plains area. In addition to this agricultural demand, all the eastern municipalities in Colorado, except those along the base of the mountains, derive their water supplies from wells. It is quite obvious that this competition for water is likely to cause a disturbance of the water table, especially where it is concentrated.

This development has come about without regard to the adequacy of the supply. In fact, it probably would have made no difference if the safe yield could have been determined in advance. People will take what they conceive to be their share, a trait for which they cannot be blamed, but in numerous cases, this has resulted in a serious situation. These ground waters are much too important to Colorado's economy not to have full information on their location, the quality and nature of the geologic formations in which they occur. From such data, prospective purchasers of pumping plants may gain some knowledge of the probable security of their investments. The surface water supply of the State is carefully measured and apportioned among users according to their rights to use it. This has been a continuous activity

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on the part of our State Engineer since Colorado became a state. Adequate provisions were made in our constitution and in the body of laws that followed as to how the surface water would be apportioned. They have been reasonably satisfactory but it took a critical situation in the Cache la Poudre Valley in the early days to determine the manner in which this should be done. Similarly, there is a very definite need for information and legislative guidance on ground-water supplies.

The natural physical laws governing the flow of ground water are quite different than those for surface flows. A different approach is needed. The difficulty is that we can't see what is going on underground and must rely on general principles and assumptions to make quantitative determinations. This, the ground-water hydrologist can do with reasonably satisfactory results, but not with the same comparable accuracy as with surface streams. Given the financial means he can locate the bodies of water-bearing gravels, determine their extent, the direction of flow, the amount of water in storage and the quantity flowing past any particular section. He can locate the boundaries between ground water areas which are frequently required because of the lack of similarity in geology and extent of use. This is basic information necessary to understand the capabilities of our ground-water supply, and to provide a proper foundation upon which any proposed legislation might be framed. Investigations of this character are most efficiently conducted as a relatively small but continuing project with modest annual appropriations rather than under a highly intensive program of short duration. In the past, appropriations by the legislature for cooperation with the Ground-Water Division of the U.S. Geological Survey have been too small to make desirable progress.

Colorado A and M College has been collecting data on water table fluctuations since 1929. These have proved very useful in determining what areas are stable and those which are declining. Long-time records are needed to determine stability or rate of decline. The College also has made investigations of the ground-water conditions in certain areas in the past. In 1945, the Ground-Water Division of the U.S.G.S. was invited to come into Colorado to carry on an investigational program under a fund-matching arrangement. To date the State has spent about \$120,000 in this manner. Surveys were made of three large areas and of many local problems.* Funds have been inadequate to publish some of the reports on results of completed surveys. Colorado has spent less than any comparable western state on ground-water surveys.

* The extent of accomplishments by the U.S.G.S. is available in mimeograph form from the Colorado Water Conservation Board.

Colorado Conditions

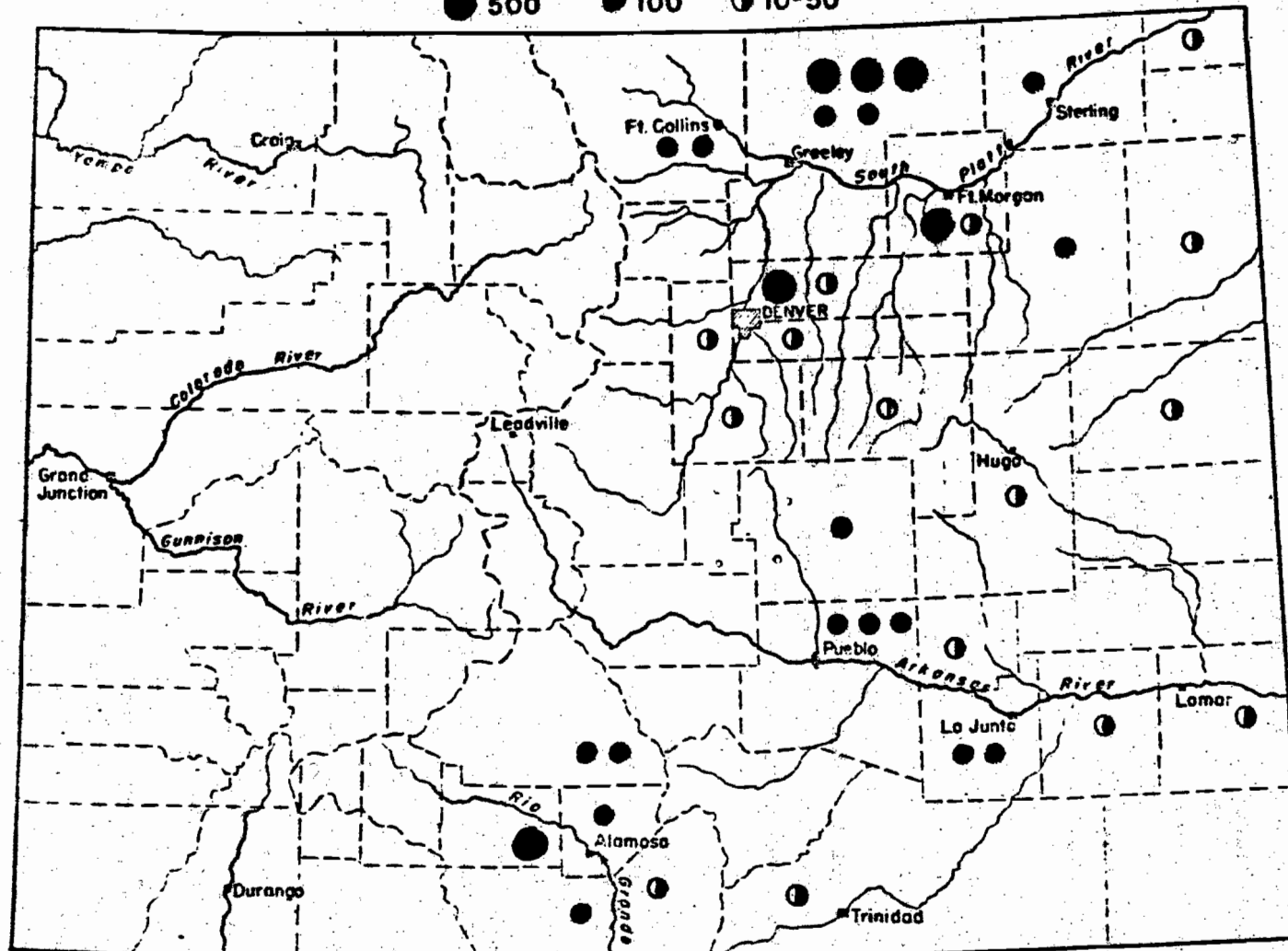
The greatest use of ground water in Colorado is in irrigation. However, the use by municipalities and individuals for domestic purposes is of equally great importance. Only those cities and towns near the east edge of the mountains have a surface-water supply. The remainder in the plains section depends on ground water. With the exception of a very few, these municipalities have had no serious difficulty in developing an adequate supply, however, the search for good quality water has complicated matters for some. All towns in the San Luis Valley are supplied with artesian water.

The accompanying map of the state shows the distribution of the approximately 5,000 irrigation wells according to the 1950 Census. The preponderance of these wells is in areas already under irrigation from surface sources and they serve as a supplementary water supply. In the South Platte drainage there are about 3,400 such wells and it is estimated that in 1953 they produced easily enough water to twice fill Horsetooth Reservoir. This reservoir holds 140,000 acre-feet of water. Thus, one can visualize their great combined capacity and their tremendous value as an instantaneously available supply to balance out shortages.

There is quite a large proportion of the total number of wells located along the dry tributaries of both the South Platte and the Arkansas Rivers. These furnish the entire irrigation supply for the lands served. Also in the plains section of the area drained by the Republican River and its tributaries, there are some 200 irrigation wells. The most important of the South Platte tributary areas are on the Box Elder north of Watkins, the area around and south of Wiggins on the Bijou, and on Beaver Creek south of Brush in Morgan County. There are small ground-water developments in the upper parts of Big Sandy Valley and Black Squirrel Creek which drain into the Arkansas River. Except for the Republican, these tributaries have flows only after substantial storms and therefore they are of no value as a surface irrigation supply. It is in such areas where concentrated pumping has exceeded the normal replenishment and water tables have been receding regularly each year. Whereas pumping areas under canal irrigation have a very good potential for replenishment for canal losses, the areas along stream courses which carry water only occasionally have to depend on such flows as a means of replenishment of the ground-water reservoir. At the present time an area just north of Watkins along the Box Elder, the Bijou Valley from Wiggins south for about 20 miles, and in the vicinity of Gary on Beaver Creek are all showing the serious symptoms of a constantly declining water table.

IRRIGATION WELLS IN COLORADO

● 500 ● 100 ○ 10-50



It is necessary to point out a very significant difference between the pumped areas along the dry streams and those along the streams carrying appropriated water. In the second case it would require no great stretch of the imagination to concede that an irrigation well might intercept water that would otherwise join the stream flow. The fact is well established that return flow is the result of the emergence of ground water flow at the ground surface. It is flowing towards those streams. An irrigation well operating within a mile of such an emergence conceivably might have an early and measurable effect upon that return flow.

Although the ground water in a normally dry surface tributary flows in the direction of and joins the ground water adjacent to the main stream in which there is appropriated water, there is a recognizable important difference in the opportunity for such a tributary flow to affect stream flow. The pumping areas along the tributaries are often many miles from the main stream. A reasonable velocity for ground-water movement would be three miles per year, hence, for a drop of water to move from a pumping field to a point of discharge into a stream would ordinarily be a matter of several years. During the elapsed time, losses from surface stream flow might make up for the loss in ground water storage due to pumping. Furthermore the normal net ground water contribution from tributaries to main stream surface flow is not very great. As an illustration, assume a ground-water flow two miles wide and 50 feet thick and having a slope of 20 feet per mile, then for an average character of gravel, the total discharge would be of the order of 10 cubic feet per second. Now if the water table is lowered 10 feet, the reduction in discharge would be about $1/5$ of the total flow. In other words, the influence of remote up-stream pumping on main stream surface flow would be small indeed. The pumps are removing water stored in the ground centuries ago and the lowering of the water table is of much more importance between themselves than between them and surface water users. The point that the author is endeavoring to make here is that any legislation on ground water should take into account these differing conditions of sources.

Besides the restricted valley areas on tributaries there is another condition of ground-water occurrence to be considered. It is that represented by the plains area of the State and the San Luis Valley. In these instances the water table exists as a broad sheet of water between drainage channels many miles apart, in some places as much as 50 miles apart. Although the same laws of hydraulics apply to these waters, they are sometimes considered different legally than ground water confined to a valley. They may or may not be contributing water to living streams within the State.

Legal Concepts on Use of Ground water

Many of our basic laws are naturally taken from the English common law. Among them are the rules regarding water, more important, surface water, as in the early days there were no conflicting ground-water usages. These rules applied to land through which a stream ran or bordered. The owner had a riparian right and could insist that the stream flowing through his property continue undisturbed as to quantity or undefiled in quality. It gave to the owner of the surface right ownership of the ground waters. In climates where the problem was more that of getting rid of water, this rule was not seriously questioned. Under irrigation from surface streams obviously it was inapplicable, and Western United States early in its irrigation history abrogated the English law for the Roman law which more nearly fitted its needs. The rule now followed is that of prior appropriation and had its inception in the mining regions. This rule states that the first appropriation of water to beneficial use has the first right. It was perfected under the leadership of the State of Colorado. Only California has attempted to straddle the issue by trying to apply both rules. Actual ownership of water where the common law has been abrogated lies in the state or the public. An individual can acquire only the right to use water beneficially. This right can be like real property in Colorado because it can be deeded to another, sold or transferred to other lands or uses. In Wyoming, however, it is definitely attached to a specific parcel of land. Also rights may be lost because of abandonment or lack of due diligence in maintaining facilities.

The common law was early applied to ground water. This rule began to change to the so-called American rule of reasonable use as far back as 1862 by a court decision in New Hampshire. It requires the owner of the overlying land to so use the ground water as not injure the rights of adjacent land owners. In California an extension of the American rule of reasonable use called the correlative right rule has been adopted. Under this rule each overlying property owner shares equally in the common source according to his surface ownership. There is nothing to prevent eventual depletion of the supply and those most favorable situated both as to position geographically and financially are the only ones likely to survive. Whereas, the American rule is none too definite because of the difficulty of defining reasonable use, the correlative rule in California is definite in stating that the transportation of water to distant lands may be considered unreasonable in times of shortage. In Utah another view is held on transported water based on its overall best use.

The rule of priority of appropriation of ground water has been adopted by several Western states. In general, the rules adopted have been based on

conceptions similar to those employed with surface waters but with numerous variations. Variations are to be expected because of the varying ground-water conditions, the temperament of the public and in some cases, constitutional provisions. It definitely can control the rate of withdrawal from a ground-water basin or district either through decisions by the administrator or by vote of the people. It can be employed in various ways to prevent an overdraft on the ground-water supply. It can be selective, that is, it need not be of equal force in all parts of the state. Pumping areas can be set up as districts with rules and regulations adopted which are not inconsistent with a basic state code.

Legal Situation in Colorado

Colorado, not having specific statutes on ground water to be guided by, has had to rely upon rules laid down by the courts in the past. One of these, a Supreme Court Decision of wide importance, held that all groundwaters, which if not intercepted, would reach and become a part of some natural stream either on or beneath the surface, and are governed by and controlled by the terms of the constitution and statutes relative to appropriation, the same as the surface waters of such stream. In a subsequent decision it appears that the burden of proof lies with the one who claims that ground water is not tributary to a stream, to establish that fact.

There have been recent court decisions based more or less on previous ones that can be considered important. One, Safranek vs. Town of Limon, a Supreme Court decision, held that ground water flowing in the Big Sandy Valley was tributary to that stream and not percolating water and hence was subject to appropriation. It further held that "Colorado has departed from the common law as to ownership of percolating waters by surface owners-----." A later District Court decision in 1953 had to do with interference between users of artesian waters in the San Luis Valley. In this case a number of artesian well owners claimed that the operation of an irrigation well tapping the artesian flow caused their wells to cease to flow. The Court found in favor of the defendant and dismissed the complaint of the plaintiffs. In his decision the judge avoided the doctrine of appropriation and based it upon the American rule of reasonable use. It would indeed have been unfortunate in this case had the decision been based upon prior appropriation or on maintenance of lift. Further agricultural use of this water would have been stopped even though water was available to the plaintiffs by means of pumping.

Most important decisions both by lower courts and the Supreme Court have been wise in character and have in no way restricted ground-water development. In this we have been most fortunate. Yet there are certain situations as to ground-water use that definitely need clarification since in the minds of many of the legal profession much of the ground water use is, in theory at least, antagonistic to surface-water rights.

The most recent action by a District Court was that of an adjudication of 459 irrigation wells in Water Districts 3 and 1. In essence, the adjudication has the effect of applying the appropriation doctrine as between ground-water users. The possible effect of pumping on vested rights in stream flow is not entirely ignored but the conflict is resolved by applying the reasonable-use rule. In each of the decrees this statement or a similar one occurs: "The source of supply from which water is drawn and diverted is a district source of underground or subterranean water in subsurface strata underlying lands owned by the claimants and others from which water is pumped to the surface from the irrigation well of John Doe. Said water is drawn from beneath clay strata of said land, is not tributary to or a part of any known or natural stream and would not in natural course if left undisturbed in its natural condition appreciably augment the flow of any natural stream, and, except for that portion consumed by crops and evaporation, the water so released pumped and spread upon the land replenishes the water under said lands."

A surface appropriator, however, has recourse in the courts if he can show injury from pumping -- a most difficult thing to do in most cases. An adjudicated water right of course places the right holder under the administration of the State Engineer, whereas, under past conditions he had no jurisdiction. The whole matter caused much uneasiness and indecision among attorneys and well owners as to whether to come in or stay out. The result was that only a part of the owners had their wells adjudicated. Both sides now wonder what their status is.

A discussion on this adjudication was held in the 1953 convention of the Colorado Bar Association and a member* is quoted in part:

"Months of study were devoted by irrigation attorneys to the advisability of entering irrigation wells in this adjudication. Many hours were spent on research and thought. We have an accomplished fact in our District in the awarding of independent priorities to this underground water - - - - -"

"There being no specific legislation or statutory law in this state fixing relative rights by the appropriators of subterranean waters, it is felt that Judge Coffin has extended the Appropriation Doctrine to these wells, construing the law of reasonable use into it. Too many times perhaps we attorneys are 'against' something because there is no precedent. Our

* John R. Clayton, Attorney at Law, Greeley, Colorado

common law has been built up by what has been done and how a thing has been done. This Decree attempts to harmonize practices of long standing in our District with the Appropriation Doctrine. This has been done without the necessity of an extensive underground water code. During the early phase of development in a ground-water area, the problems are largely those of individuals or small groups. Later they become of community or even statewide concern.

"A water code applicable to an entire state would reach to state lines. There are many outstanding differences between surface waters and underground waters. The law applicable to surface waters is very easy of administration -- in any portion of the state one diverts by a dam and a headgate. The water is visible. On underground waters we have an entirely different situation. We have nothing visible; we do not know the extent of the amount of water available for pumping; we have little information regarding recharge -- in other words, the study of underground water is a comparatively recent thing. Month by month we are by hydrological studies obtaining more information."

A decision is to be made by the people of Colorado whether to adopt a ground-water code or permit themselves to drift into a chaotic situation permitting a continuance of unresolved conflicts between users of both surface and ground water. Many other western states have already faced the problem and have adopted codes. Not always has this been a simple matter as for instance in the case of Arizona.

In 1948 the governor of Arizona kept the legislature in one special session after another until a code was adopted which later proved unsatisfactory. In 1953, their Supreme Court declared the code unconstitutional and a new one is to be considered in 1954. There is little doubt that the courts would welcome definite statutes to clarify the situation rather than depend upon previous decisions. The picture is a changing one. The tremendous investment made in the last 20 years in irrigation wells and the threat of exhaustion in some areas are potent factors calling for statutory definition of status and guidance for the courts.

Past and Present Colorado Legislation

The need for specific ground-water legislation in Colorado has been realized for some time. In 1935 a bill was passed prohibiting pumping of artesian water if such pumping interfered with domestic use. It was so drawn as to apply only to the San Luis Valley and was never enforced. A comprehensive ground-water bill was prepared by the Colorado Bar Association in 1946. Since it did not have the unanimous support of the committee that prepared it and many outside the legal profession opposed it, the bill was not offered for consideration by the legislature. In the light of subsequent developments any new bill drawn would likely be of quite different character.

In 1950 the State Agricultural Planning Committee became interested in ground-water legislation and appointed a chairman whose duty it was to organize a sub-committee to study the situation. The services of Judge Clifford H. Stone, then secretary of the State Water Conservation Board, were enlisted to help this committee. Members were chosen from various parts of the State representing diverse conditions and interests. In addition to this representation, there were hydrologists, engineers and members from the legal profession. This committee met a number of times in 1950, 51 and 52. It did not accomplish much more than provide a sounding board for those with ideas. There was a great diversity of opinion ranging from several kinds of rules of control to none at all. It accomplished one definite thing, however. It formulated a bill for an act to control the drilling of artesian wells. This appeared urgent to many in the San Luis Valley where recent wells of large capacity were being drilled into the artesian sands. Several were not properly constructed nor controlled. This bill was introduced in the 1952 session of the legislature but was defeated. It was again introduced in the 1953 session after some objectionable features were amended. This time it was seized upon and very extensively revised to contain certain features of ground-water control. There seemed to be no debate over it and it passed without difficulty. It has many defects and is considered entirely inadequate and undesirable by the legal profession and many other competent persons. Among other things it places administration in the Colorado State Water Conservation Board, which is a policy-making agency. The State Engineer's office is the administrative agency on all other water matters. An uncertain device was proposed to permit the formation of ground-water districts. No appropriation was made to enforce it.

Recognizing that the Agricultural Planning Committee's sub-committee had no official status, it was decided to form another committee under the direction of the State Water Conservation Board with the Board's Director as chairman. The membership of the new committee is similar to the first

committee but its personnel is more uniformly representative of the State's interests. This committee started functioning in 1952. A technical sub-committee composed of geologists, engineers and well drillers and a legal sub-committee composed of attorneys were appointed. The technical committee in 1952 submitted a report which described the occurrence of ground water in the state, its present and probable future development, and problems to face. The committee was fortunate in having good data of a general character and in a few places excellent special data to work with. Much of the State, however, is still lacking in specific information. This report was handed to the legal committee which, because of the death of Judge Stone did not begin deliberations until January of 1954. It is the ambition of the committee to prepare a bill, acquaint the public with its contents for its reaction, and have it in readiness for consideration of the 1955 General Assembly.

The task of the legal sub-committee will not be an easy one. It will need to compose the conflicting opinions that exist in the various parts of the State because of the varying conditions. There are those places in the valleys of the stream courses where ground-water replenishment is assured through losses from irrigation. There are other pumping areas removed from those having irrigation water supplies brought in from stream flow, that have inadequate replenishment and where the water table is receding. Ground-water conditions in Colorado for instance, are quite different from those in Arizona and California. There the water-bearing formations are of great thickness while in Colorado they are relatively thin and underlain with impervious shale. Deepening our wells to keep up with a falling water table is out of the question. The users under these two quite different conditions will naturally have differing viewpoints as to legislative needs. If priorities are to be adopted, those near stream channels will not wish to have such priorities connected with those in stream flow. In fact such users prefer the status quo in that under present conditions they have not been disturbed. The other group feels that control in some form is needed among users from a limited source. What character of legislation that seems best suited and yet be constitutional, will require the combined best thinking of this group of competent attorneys.

No ground-water code is complete without control over the methods of constructing wells. The law of 1953 covered the construction of artesian wells fairly adequately and is very necessary to prevent waste and contamination. There is, however, room for improvement. It lacks control over domestic wells in general, most of which are not artesian in character. Proper methods of construction should fit into the requirements of the State

Board of Health. Safeguards should be set up to prevent contamination of the ground-water from waste products and interchange between formations carrying good and poor quality water.

No ground water code is worth the paper it is written on unless there be funds appropriated to enforce it. It is hoped that this omission in the past will not be repeated. It would be most disheartening to those who are gratuitously giving of their time and talent, for their efforts to come to naught in this manner.

APPENDIX D

Public Law 566 - 83d Congress
Chapter 656 - 2d Session
H. R. 6788

AN ACT

To Authorize the Secretary of Agriculture to cooperate with States and local agencies in the planning and carrying out of works of improvement for soil conservation, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United State of America in Congress assembled, That erosion, floodwater, and sediment damages in the watersheds of the rivers and streams of the United States, causing loss of life and damage to property, constitute a menace to the national welfare; and that it is the sense of Congress that the Federal Government should cooperate with States and their political subdivisions, soil or water conservation districts, flood prevention or control districts, and other local public agencies for the purpose of preventing such damages and of furthering the conservation, development, utilization, and disposal of water and thereby of preserving and protecting the Nation's land and water resources.

SEC. 2. For the purposes of this Act, the following terms shall mean:

The "Secretary"- the Secretary of Agriculture of the United States.

"Works of improvement" - any undertaking for-

(1) flood prevention (including structural and land-treatment measures) or

(2) agricultural phases of the conservation, development, utilization, and disposal of water

in watershed or subwatershed areas not exceeding two hundred and fifty thousand acres and not including any single structure which provides more than five thousand acre-feet of total capacity. No appropriation shall be made for any plan for works of improvement which includes any structure which provides more than twenty-five hundred acre-feet of total capacity unless such plan has been approved by resolutions adopted by the Committee on Agriculture and Forestry of the Senate and the Committee on Agriculture of the House of Representatives, respectively. A number of such subwatersheds when they are component parts of a larger watershed may be planned together when the local sponsoring organizations so desire.

"Local organization" - any State, political subdivision thereof, soil or water conservation district, flood prevention or control district, or combinations thereof, or any other agency having authority under State law to carry out, maintain and operate the works of improvement.

SEC. 3. In order to assist local organizations in preparing and carrying out plans for works of improvement, the Secretary is authorized, upon application of local organizations if such application has been submitted to, and not disapproved within 45 days by, the

State agency having supervisory responsibility over programs provided for in this Act, or by the Governor if there is no State agency having such responsibility -

(1) to conduct such investigations and surveys as may be necessary to prepare plans for works of improvement;

(2) to make such studies as may be necessary for determining the physical and economic soundness of plans for works of improvement, including a determination as to whether benefits exceed costs;

(3) to cooperate and enter into agreements with and to furnish financial and other assistance to local organizations: Provided, That, for the land-treatment measures, the Federal assistance shall not exceed the rate of assistance for similar practices under existing national programs;

(4) to obtain the cooperation and assistance of other Federal agencies in carrying out the purposes of this section.

SEC. 4. The Secretary shall require as a condition to providing Federal assistance for the installation of works of improvement that local organizations shall -

(1) acquire without cost to the Federal Government such land, easements, or rights-of-way as will be needed in connection with works of improvement installed with Federal assistance;

(2) assume such proportionate share of the cost of installing any works of improvement involving Federal assistance as may be determined by the Secretary to be equitable in consideration of anticipated benefits from such improvements: Provided, That no part of the construction cost for providing any capacity in structures for purposes other than flood prevention and features related thereto shall be borne by the Federal Government under the provisions of this Act;

(3) make arrangements satisfactory to the Secretary for defraying costs of operating and maintaining such works of improvement, in accordance with regulations presented by the Secretary of Agriculture;

(4) acquire, or provide assurance that landowners have acquired, such water rights, pursuant to State law, as may be needed in the installation and operation of the work of improvement; and

(5) obtain agreements to carry out recommended soil conservation measures and proper farm plans from owners of not less than 50 per centum of the lands situated in the drainage area above each retention reservoir to be installed with Federal assistance.

SEC. 5. At such time as the Secretary and the interested local organization have agreed on a plan for works of improvement, and the Secretary has determined that the benefits exceed the costs, and the local organization has met the requirements for participation in carrying out the works of improvement as set forth in section 4, the Secretary is authorized to assist such local organizations in developing specifications, in preparing contracts for construction, and to participate in the installation of such works of improvement in accordance with the plan: Provided, That, except as to the installation of works of improvement on Federal lands, the Secretary shall

not construct or enter into any contract for the construction of any structure unless there is no local organization authorized by State law to undertake such construction or to enter into such contract, and in no event after July 1, 1956: Provided, That in participating in the installation of such works of improvement the Secretary, as far as practicable and consistent with his responsibilities for administering the overall national agricultural program, shall utilize the authority conferred upon him by the provisions of this Act: Provided further, That, at least forty-five days (counting only days occurring during any regular or special sessions of the Congress) before such installation involving Federal assistance is commenced, the Secretary shall transmit a copy of the plan and the justification therefor to the Congress through the President: Provided further, That any such plan (a) which includes reclamation or irrigation works or which affects public or other lands under the jurisdiction of the Secretary of the Interior, or (b) which includes Federal assistance for floodwater detention structures, shall be submitted to the Secretary of the Interior or the Secretary of the Army, respectively, for his views and recommendations at least sixty days prior to transmission of the plan to the Congress through the President. The views and recommendations of the Secretary of the Interior, and the Secretary of the Army, if received by the Secretary of Agriculture prior to the expiration of the above sixty-day period, shall accompany the plan transmitted by the Secretary of Agriculture to the Congress through the President: Provided further, That, prior to any Federal participation in the works of improvement under this Act, the President shall issue such rules and regulations as he deems necessary or desirable to carry out the purposes of this Act, and to assure the coordination of the work authorized under this Act, and related work of other agencies including the Department of the Interior and the Department of the Army.

SEC. 6. The Secretary is authorized in cooperation with other Federal and with States and local agencies to make investigations and surveys of the watersheds of rivers and other waterways as a basis for the development of coordinated programs. In areas where the programs of the Secretary of Agriculture may affect public or other lands under the jurisdiction of the Secretary of the Interior, the Secretary of the Interior is authorized to cooperate with the Secretary of Agriculture in the planning and development of works or programs for such lands.

SEC. 7. The provisions of the Act of June 22, 1936 (49 Stat. 1570), as amended and supplemented, conferring authority upon the Department of Agriculture under the direction of the Secretary of Agriculture to make preliminary examinations and surveys and to prosecute works of improvement for runoff and waterflow retardation and soil erosion prevention on the watersheds of rivers and other waterways are hereby repealed: Provided, That (a) the authority of that Department of Agriculture, under the direction of the Secretary, to

prosecute the works of improvement for runoff and waterflow retardation and soil erosion prevention authorized to be carried out by the Department by the Act of December 22, 1944 (58 Stat. 887), as amended, and (b) the authority of the Secretary of Agriculture to undertake emergency measures for runoff retardation and soil erosion prevention authorized to be carried out by section 7 of the Act of June 28, 1938 (52 Stat. 1215), as amended by section 216 of the Act of May 17, 1950 (64 Stat. 163), shall not be affected by the provisions of this section.

SEC. 8. There are hereby authorized to be appropriated such sums as may be necessary to carry out the purposes of this Act, such sums to remain available until expended.

SEC. 9. This Act may be cited as the "Watershed Protection and Flood Prevention Act".

Approved August 4, 1954.